An Address
ON
THE MODERN TREATMENT OF FRACTURES.

Delivered at the Annual Meeting of the Cardiff Medical Society on June 4th, 1909.

BY JUST LUCAS-CHAMPIONNIÈRE,
HONORARY SURGEON TO THE HÔTEL-DIEU, PARIS; MEMBER OF THE FRENCH ACADÉMIE DE MÉDECINE; PRESIDENT OF THE INTERNATIONAL SOCIETY OF SURGERY.

GENTLEMEN,—I no doubt owe the honour you have done me in asking me to deliver an address on this occasion to the fact that I am an old student of the British universities. When I was a young man, soon after completing my studies in Paris I paid a visit to this island, early enough to see the surgical science of Lister at its dawn, and I am happy to-day to remember and to state that since that time I have been among those who have always rendered just homage to the science of your country. This is not because, like certain philosophers, I think that Science has no country; on the contrary, I believe that we ought to be as proud of our country's men of science as of our great soldiers. But the man of science is fortunate in that he is imbued with an additional sentiment added to the love of his own country, and that is a sincere admiration and brotherly sympathy for all those who in foreign countries have enriched the science to which he himself has devoted his life.

The best way of proving sympathy and sincere admiration for a scientific association which meets to celebrate a long and laborious past is to present to it a review of a subject to which the speaker has for many years himself given much attention. I propose, therefore, on this occasion to speak on the modern treatment of fractures, not only because I believe firmly in the efficacy of a mode of treatment which I myself introduced, but also because the profession in this country is still under the influence of the righteous emotion caused in the surgical world by the unjust accusation to which your compatriots were subjected. That it is possible for such injustices to occur is due not merely to the existence of a feeling unfriendly to the medical profession, but also to the important changes which the method of treating fractures has recently undergone, changes not fully known to the medical world, and still more imperfectly known to the non-medical public. The importance and gravity of the subject will, I hope, interest you sufficiently to induce you to forgive any deficiencies in my address.

TREATMENT BY REDUCTION AND SPLINTS.

The truth is that within recent times the classical treatment of fractures has been undergoing a radical change. It is a remarkable fact that the treatment of fractures, the beginnings of which go back so far into the mists of time that we have no idea of the era when splints and treatment by immobilisation were invented, has always rested upon the same data and upon the same principles ever since the first beginnings of the science of surgery. Read any treatise on fractures, from the most ancient to the most modern, from Hippocrates to Ambroise Paré, to Dupuytren and Malgaigne and Hamilton; read all the encyclopædias, even the titles of which I cannot enumerate—every one of them will tell you that movement is the enemy of the formation of callus and of bony repair; that it is an obstacle to the formation of callus, so that defective consolidation, whenever it is observed, is attributed to movement having been permitted. In order to obtain the union of fractures all practitioners have taken account of one fact alone—that a bone is a rigid lever. When it is broken the fragments must be fixed in the position of the normal bone and immobilised. To reduce and to immobilise are the only measures upon which attention is riveted.

Ambroise Paré, the first surgeon who boldly relied on his own personal observation, whose imagination was always alive to find out something new, often hesitates between his own imagination and the ancient traditions as to fractures, but he ends up always with remarks which impel him to greater exactness and greater violence to ensure the reduction of fractures and their maintenance in position. Beyond this he gives information only as to the drugs which might favour the production and the union of bone. With the exception of this last point, the aims of Dupuytren, of Malgaigne, and of Hamilton are exactly the same, although, like all nineteenth century writers, being convinced that they possess much more accurate views on anatomy and physics than the older writers, they apply procedures for reduction and maintenance still more rigorously, and invent new details in the methods of reduction and in splints. The strange thing is that they are so persuaded that they really reduce fractures, and that they favour union by immobilisation, that they pay little or no heed to clinical observation. It does not occur to them to try any other means. If their results are bad, their only thought is to attribute the failure to the inadequacy of the means of reduction and immobilisation which they had adopted. Here and there in their writings on fractures it can be clearly perceived that some great observers were disturbed by facts which, as it were, struck them in spite of themselves. Malgaigne had, indeed, seen untoward results due to muscular contraction in fractures of the lower limb, and he thought that in the inclined plane he had found a means of preventing them. Hamilton, speaking of fractures of the elbow, recommends that the fragments should be immediately mobilised at the risk of not obtaining good adjustment, because it is essential to prevent ankylosis. Velpeau recommended that in fracture of the radius the splints should never be tightly applied, for fear of causing permanent ankylosis. The doubts expressed by these surgeons show that the evil consequences of immobilisation could not have been altogether unknown to them, yet not one of them was bold enough to run counter to accepted opinions; all soon returned to the employment of the most complete possible immobilisation after the most violent reduction. We find the greatest surgeons devising most extravagant appliances, such as Dupuytren's splints for fracture of the radius, the action of which is utterly futile, because, from a *point d'appui* in itself detestable, it has to oppose the contraction of the muscles and the cicatricial contraction at the site of the fracture; or again, that apparatus of Desault for fracture of the clavicle, which recalls the "Maiden," the torture jacket of the Middle Ages, under which the contraction of the muscles renders certain in the future the maximum possible deformity owing to overriding of the fragments of the bone.

Every one of these authors, not excluding even those who hesitated, all come back to the formula which Malgaigne very frankly placed at the head of his great treatise on fractures: "The treatment of fractures can be summed up in two great indications: Reduce the fracture and keep it reduced until consolidation is complete." The nineteenth century saw the birth of a considerable number of works on fractures; all of them rely, above everything else, on physical or geometrical theories of the mechanism of fractures; if they discuss treatment at all, it is only to describe new means for the forcible reduction of fractures and their maintenance in position.

TREATMENT BY IRREMOVEABLE APPLIANCES.

An enormous part in treatment of this kind has been played by a new invention—that of irremoveable apparatus. This method of treatment is extremely valuable in certain cases, but the infatuation for these appliances has been such that in a very large number of cases they are the cause of the very worst evils that can be produced by immobilisation. To realise the regrettable results of this absolute immobilisation upon the nutrition of the limbs we must come down to our own times. The problem presented by the treatment of fractures, which used to be "reduce, and maintain relative immobility," has now become "reduce, and enforce absolute immobility of one or several segments of the limb without regard to the duration of the immobilisation."

THE ORIGIN OF MODERN TREATMENT.

It was perhaps the very exaggeration of the evil produced by the abuse of this ingenious invention that contributed to bring about an understanding of the necessity for a change in treatment. So far as I myself am concerned, it was the excess of the evil which, more than any other fact, particularly struck me. The excess of the evil opened my eyes to the inconveniences of immobility, and to the part which mobility ought to play in the repair of fractures. This

observation it was which emboldened me to make mobilisation a leading principle in the treatment of fractures. The success of the treatment has been due to the very numerous clinical observations which have demonstrated the truth of the principle. But to bring about an abrupt change in treatment, and to replace a bad by a good line of treatment, it is not alone sufficient for observers to recognise the existence of the evil. Our art must advance by slow steps, and it is well to learn how a change which upsets all the oldest principles could be made, how it could even enter the mind of an observer, and how it could be adopted by the majority of surgeons accustomed to another practice, which, although it presents many disadvantages, yet has for centuries rendered services at once incontestable and uncontested. This progress in therapeutics must be brought into relation with the great scientific changes by which modern surgery has been created. The paradoxical idea of introducing movement as a part of the treatment of fractures, and its acceptance by the medical public, must in fact have owed its development and its success to some very strong reasons.

Before making known the results of my own observations and experience I long meditated upon the facts and I can assert that I only made up my mind to publish conclusions contrary to all received ideas and to initiate a revolution in treatment, because I was witnessing and taking a part in the transformation which surgery was undergoing. Pasteur and Lister had so completely upset all our earlier notions that their example forbade any hesitation in submitting the best established scientific and practical theories to severe criticism. They inspired me with the courage which alone could lead to useful discoveries and transform what it is most difficult to transform—practices resting upon most ancient customs, such as are to be described by the word "routine." My assertions as to the remote consequences of the discoveries of Lister may be considered exaggerated, yet I am profoundly convinced of this indirect influence of a great piece of scientific work, and more especially of a piece of work which brought about a radical transformation not only in scientific theory but also in the mechanical execution of the details of the surgeon's own acts, a change which completely upset his habits in practice. This extraordinary piece of work which upset all our habits and destroyed the whole edifice of our surgical education, produced in us such an aptitude for change that I also found it possible to accomplish another piece of destructive scientific work, which, while it has its own dangers, can alone lead to great transformations in science and in practice. The relation of the change which I have advocated to our older education is in fact very singular. A distinguished American surgeon, Caldwell, of Freeport, who had assiduously followed my practice at the Beaujon Hospital and had watched my treatment in the various types of fractures treated there, said in summing the matter up: "It is a very strange thing, after spending all one's life as a surgeon and following scrupulously the precepts of surgery, to realise that one has been steadily deceived, and that in a practical matter so well established as the treatment of fractures one has been doing evil where one believed that one was doing good."

Is not this the very same idea that Sir William Bennett has sought to express in the introduction to his "Lectures on the Use of Massage and Early Passive Movements in Recent Fractures"?

> Indeed, it cannot but excite surprise in the mind of an intelligent person that the stiffness, pain, and other disadvantages which so constantly follow the treatment of fractures upon classical lines, should have been countenanced for so many years when they can, in the majority of cases, be entirely obviated by a treatment so simple as that described in the following lectures.

To break so completely with acquired habits, even when the change is the consequence of numerous positive observations, is in truth a revolution, and revolutions are only made when the reasons in their favour are many and strong. The transformation wrought in our scientific mentality, giving it a degree of boldness which might seem to be temerity, undoubtedly had a leading part in influencing my course. But the advance of surgery is always complex, and it must not be forgotten that other considerations influenced my mind, leading me to study the fundamental influence of movement on the vitality and on the regeneration of organs damaged or destroyed by injury. It is no doubt true that these considerations also have no very direct bearing, but they are the consequence of the advance of science and of the contemporary progress of medicine and physiology. When the study of many of the empirical methods of massage and gymnastics was commenced in France the study of movement was at the same time founded and developed. In this study two great French men of science were the chief leaders. Marey, by his methodical and in a certain sense mathematical study of all movements, taught us to register and reproduce them in pictures which were at once true and expressive; while Lagrange introduced medical analysis into the study of functional and gymnastic movements by applying the physical ideas of Marey to sport and training. It is, at any rate, the fact that my acquaintance with these two men of science contributed to lead me to study movement from the point of view of its physiological and pathological consequences in fractures and in injuries of the joints. Since that time a considerable number of men of science, teachers of gymnastics, masseurs, and others have carefully studied all the scientific facts bearing on the subject, and the present position of what is called physio-therapy is the result of a series of quite modern investigations.

The study of movement from the educational and therapeutic points of view seems to have originated in France during the last century. The aims of the gymnastic methods of Amoros and Laisné were at first educational, but their application in our country long remained very restricted, whereas in England and in America the love of sport gave origin to important empirical ideas with regard to movement and to training. It was, however, in Sweden and Norway especially that the study of movement from the educational point of view and the development of the art of massage were given a truly scientific character, and was controlled by men of science and doctors, while in every other country it remained the property of empirics. We must, in fact, not fail to recognise that the share of Sweden and Norway in the evolution of massage and gymnastics has been scientific. It must not be supposed that the fundamental difference between the system of gymnastics known as Swedish and other systems lies in any actual difference in the movements. The merit of the Swedish system of gymnastics lies in the application of scientific rules and of a definite method. The cause of its success is to be found in this methodisation. Various very different forms of movement are capable of giving equally successful results if they are measured and if they are performed on a regulated system. Again, it is the method or system which has rendered it possible to use this therapeutic procedure in many very different forms of education and treatment.

TREATMENT BY MASSAGE AND EARLY MOVEMENT.

With regard to the treatment of fractures which I advocate, I will say this, that my success has been due, more than anything else, to the introduction of a strict method of applying special forms of movement to the treatment of fractures. It is the method which has rendered possible the generalisation of this therapeutic measure and its application to all forms of injury of the skeleton and of the articulations. It is not unprofitable thus to recall the spirit of the method which served as a clue to guide me in working out a therapeutic revolution, and it is, in fact, true that each successive step can be traced in the history of my various trials and investigations, and in the order in which my various applications of the method succeeded one another. I began by lessening the degree of immobility; next I did away with it altogether; next I began to use movements at an early stage; then I began to use them immediately after the injury; finally, I made use of massage—that is to say, of a method of mobilising the muscles, the joints, and even the bony fragments. It was necessary to define the indications and the limits of this special form of movement. Thus it was that years of observation and experiment led me to establish the bold practice of methodical therapeutic mobilisation.

It is a singular thing to realise that it was through my own detailed studies that I did this, and that apart from my personal researches nothing was published before the appearance of the description of my method. The only instance in which massage had been used for a fracture at about the time at which I developed a complete method was for fracture of the patella; it was so used by Metzger, who apologised for applying massage to a fracture, on the ground, as he said, that in this particular fracture bony union could not be obtained. The same masseur, in discussing sprains of the ankle, stated specifically that massage

should not be used if the malleolus was fractured. At the very same period I showed, in opposition to this, that massage favoured the production of new bone, and later the beautiful experiments of Cornil on animals proved that this result of the mobilisation of the fragments was invariably to be observed, and in young animals was too great. Having carefully studied all earlier observations which might have served as precedents for my method of mobilisation and massage, I have satisfied myself that none such existed.

SUTURE OF BONES.

Since my method was devised and generalised two important means for the study and the treatment of fractures have seen the light of day; these are suture of bones and radiography. I do not wish to decry immediate suture of fractured bones. When Sir Hector Cameron performed the first suture of the patella, when Lord Lister published his articles on the subject, I was the first to follow their example. I believe, indeed, that I am to this day the surgeon who has performed the operation of suture of the patella in a greater number of cases than any other in the world. I believe also that there are few surgeons more familiar than I with the suture of bones in general. I consider that most valuable results can be obtained from immediate suture performed antiseptically. But the question is, Does the suture of bones used as a general method for treating fractures in the way recommended by Arbuthnot Lane in England, Lambotte of Antwerp, Tuffier of Paris, and many other surgeons, deserve to be generalised and preferred to every other method? Without denying its conspicuous advantages, I must say that for my part I do not think so. I believe that it is a sort of continuation of the old method of reduction and fixation of the fragments. It would seem, indeed, to be the ideal of reduction followed by immobilisation, and has, in fact, been held to be the most perfect realisation of the old precept as to the treatment of fractures. It is certain also that the more the method of mobilisation is developed the fewer will be the occasions on which immediate suture will be performed. If, as I have shown, a small amount of movement assists the process of repair at the site of fracture, it is quite evident that suture cannot be the ideal mode of treatment, for it ought, if properly performed, to do away with all movement of the fragments. I can at once give a practical example of this; suture of the olecranon is undoubtedly the simplest of all operations of the kind. I have done it for old fractures inadequately treated by other surgeons. I have never had occasion to do it for recent fractures properly treated by my method, because perfect recovery is obtained within a fortnight without operation.

RADIOGRAPHY.

Since I began the treatment of fractures by movement, light has been thrown on the study and the treatment of fractures from another new and important source; this is the application of radiography to the examination and to the treatment of fractures. Although I am the author of an essay on the errors of radiography, I appreciate the importance of radiography in regard to fractures; but I hold that on the one hand radiography cannot dispense us from the study of the symptoms of fractures, and on the other that it cannot warrant an untrained person replacing a doctor in making a diagnosis and in treating fractures. Radiography gives us only a picture of the projection of a bone, and is subject, therefore, to many more drawbacks than ordinary photography by reflection. Consequently it is necessary very critically to examine images which for a multitude of reasons may give misleading pictures of the site of the fracture. It is necessary to learn how to appreciate the real value of a radiogram; only after much experience can one become a good judge of radiograms of fractures, even when these radiograms have been well taken. A radiogram which is badly taken may give rise to a multitude of errors of representation which ought to be known and which produce many mistaken ideas in the mind of the non-medical public. Subject to these two reservations, radiography is a marvellous aid in the diagnosis and in the treatment of fractures. From this time forth the surgeon ought never to fail to use it whenever it is possible to do so. Nevertheless, the value of the help it can give varies very much. In the immense majority of cases there is very little chance that abstention from resort to radiography will prevent us from arriving at a correct diagnosis and the institution of proper treatment; it is essentially necessary in rare cases only. In the majority of instances it is only an additional security, giving a useful assurance to us and to the friends of the injured person an interesting demonstration and a document for future use.

Radiography has afforded me very special help in all that concerns my own standpoint with regard to the treatment of fractures. I have long maintained that surgeons who supposed that in reducing fractures they adjusted the bony fragments end to end and restored them to their normal position were deceiving themselves, and that in spite of faulty position, in spite of a certain degree of persistent overriding, the function of the limb again became perfect. The object which we must have in view in treatment, then, must not be this ideal juxtaposition. Radiography has, in fact, surprised surgeons very much by showing them fractures well and soundly cured, with excellent functional results, but with considerable bony displacement. Very often, indeed, surgeons not fully acquainted with these matters, and still more patients, on examining such radiograms have been led to believe that errors have been made, even when the function of the limb is as perfect as the nature of the injury renders possible. What we are thus taught will prove very valuable in establishing a modern treatment of fractures.

THE MODERN METHOD.

After this very short summary of the history of the treatment of fractures down to the present day, let me next explain my conception of what this treatment by movement is, and state the new facts observed by me which give a revolutionary character to my method. A certain amount of movement between the fragments ensures the best bony repair; this is the corner-stone on which my method is based. Every movement which is not injurious by reason of its amplitude favours repair, but it must be understood that the movement must be measured—dosed, so to say. The movement which is necessary for the repair of the bones is not less necessary to the vitality of all the constituent parts of the limb, and particularly for all the organs of motion—joints, muscles, ligaments, and tendons. The relation which the movements have to pain experienced by the patient is not such as is commonly believed; certain kinds of movement help to relieve the pain. Immobilisation, which seems to relieve, only gives momentary relief, for it prepares the way for other pains in the future. Mobilisation, gently performed as early as possible after the injury to the bones, is the method which best promotes disappearance of the pain. Massage affords the best form of movement. By simple mobilisation, by massage, and even by his own examination, the surgeon ought never to cause pain, for the pain so caused leads to fresh pain and produces complications.

The reduction of a fracture is only a relative necessity; it should be resorted to only in certain deformations of the axis of the bone which are incompatible with the function of the limb—lower third of the leg, shaft of the humerus. In a large number of cases the manœuvre of reduction is useless; it is useless in all fractures of the radius with impaction and moderate deformity, in most fractures of the upper extremity of the humerus, and in the great majority of fractures of the neck of the femur. In all fractures in which the displacement is due to muscular contraction any attempt at reduction is useless, as in fracture of the clavicle, of the olecranon, and many fractures of the malleoli. After massage the fracture is either spontaneously reduced, as in the case of the olecranon, or is very easy to maintain reduced, as in the case of the clavicle and malleolus. Those conditions which favour the vitality of the limb are all more important than those which produce immobilisation of the fragments. The fact that shortening has not the injurious influence on repair which it is said to have should not be lost sight of when considering displacement. A moderate degree of shortening which does not change the static position of a limb is favourable to repair. The muscles surrounding a shortened lever act more rapidly and better than upon a lever on which they are stretched. A certain amount of shortening ought not to be interfered with, as it is favourable to the repair of a broken bone. Massage has so great an effect in stimulating bony secretion at the site of fracture that in children, in whom the

activity of the production of bone is great, massage ought not to be applied, save with great moderation, for fear of provoking excessive osseous secretion—in fact, a tumour. In their case simple mobilisation is often sufficient. Mobilisation from the beginning, within the first 24 or 48 hours, is of capital importance, and at this stage movements of very small amplitude are sufficient; passive or induced movements are the best at the beginning. Active or spontaneous movements ought to be measured and directed by the surgeon; to allow the patient to follow his own fancy with regard to active movements is dangerous—all the more dangerous because with my method the pain caused by movement disappears from the beginning, and therefore does not limit the untimely action of voluntary movement. The pain experienced and the degree of sensitiveness of the callus are the best guides in directing and in permitting movement by the patient. The secondary treatment of fractures and their supervision ought to be prolonged. Functional use of a fractured limb is the condition most favourable to its regaining active power. Even during this secondary period everything likely to irritate the region of the callus ought to be avoided. It is useless to cause pain by movements exaggerated in amplitude or by resort to forcible manipulation.

While before my investigations the surgeon contented himself, after having reduced a fracture, by awaiting cure, the modern surgeon should play a much more active, much more personal, and much less simple part. He ought not only to diagnose the fracture but ought to make its exact nature visible by a radiographic picture, and then take action to obtain not only solidity of the limb but also to restore its suppleness, its regularity of action, and its power. He must not merely await the solidification of the skeleton. Moreover, his treatment must vary a great deal according to the age, the sex, the variety in the site of the fracture, the kind of fracture of the limb, the general or local health of the patient, his occupation, and according also to the circumstances under which he is called upon to act, for if he cannot ensure proper personal supervision of mobilisation, massage, and the supervision of the movements, it may happen that he will be compelled to replace an excellent method of mobilisation by a moderately good method of suture or absolute immobilisation. The surgeon needs a great deal of experience to conduct the treatment of a fracture in the best way, and I cannot help asking with some anxiety how a non-medical tribunal is to form a judgment on questions so complex should the patient and his medical attendants cease to be in accord. The situation is complicated. Well-to-do people bring actions against surgeons because they continue to experience pain or stiffness after a fracture; workmen reproach the surgeon because he cures them too well, inasmuch as by causing the disappearance of all secondary pain, accidents are not followed by the permanent infirmity for which they hoped. The whole history of the surgery of fractures cannot be related in an address which is already too long, but I shall have succeeded in my purpose if I have made plain to you to how great an extent the duty of the surgeon has become, difficult indeed, but effective in this matter of fractures. Instead of waiting for the injured person to cure himself, we can cure him and quickly restore to him the use of his limb.

It is a laborious task, more difficult than the banal application of irremoveable appliances; it is still insufficiently understood by the profession, and altogether unknown to the public. But I am proud to think that in your country it has met so favourable a reception that you have been willing to listen to the exposition of the subject which I have to-day offered to you as a tribute of fraternal homage.

A CANCER CRUSADE IN RUSSIA.—The annual meeting of the Anti-Cancer Association was held in St. Petersburg on May 16th, under the presidency of Dr. G. E. Kein, who stated that every sixth death in St. Petersburg of persons over 54 years of age was from cancer. The first branch of the association has been established at Yalta. A cancer laboratory has been opened in St. Petersburg, as has been already announced in our columns. A special committee is endeavouring now to obtain funds to found a cancer hospital, and thereafter a Pan-Russian Cancer Institute. A special census of cancer cases in St. Petersburg will be made in 1910.

ABSTRACT OF

An Address

ON

THE DIAGNOSIS OF SYPHILITIC DISEASES OF THE NERVOUS SYSTEM.

Delivered at the Clinical and Pathological Section of the Birmingham Branch of the British Medical Association on April 30th, 1909,

BY F. W. MOTT, M.D. LOND., F.R.C.P. LOND., F.R.S.,

PHYSICIAN TO CHARING CROSS HOSPITAL; PATHOLOGIST TO THE LONDON COUNTY ASYLUMS.

GENTLEMEN,—Although syphilis is directly or indirectly responsible for a large number of organic diseases of the nervous system and it is a useful practice based upon the results of experience to treat a large number of cases of disease of the nervous system by antisyphilitic remedies, yet it is well to bear in mind that in such a widespread disease as syphilis, *coincidence* as well as *cause* is of very frequent occurrence. Therefore, in making a diagnosis the question has to be determined whether the fact that the patient has had syphilis, or even presents at the time of examination signs of active syphilitic lesions, is a coincidence or bears a direct or indirect causal relationship to the nervous symptoms for which he is consulting you. In many cases, especially in women, there may be no history of syphilitic infection and no signs on the body, and yet the character of the disease may clearly point to the possibility or even the certainty that it is of syphilitic origin; or it may happen that without a history or signs of syphilis a nervous affection may arise in an individual, which after antisyphilitic treatment ends by cure, arrest, or amelioration, but it does not necessarily follow that the disease was syphilitic, for we do not know what would have happened in the way of improvement if no drugs had been administered; in fact, we cannot be sure whether it was an example of *coincidence* or *cause*.

A person suffering from an affection of the nervous system, whose blood gives a positive antigen reaction, is much more likely to be suffering from a syphilitic affection than one who has had syphilis but whose blood does not yield the reaction, for it is an indication that the syphilitic virus is still active, and therefore capable of producing true syphilitic lesions of the nervous system. An examination of the cerebro-spinal fluid in such a case will afford most valuable evidence not only as to whether the disease of the nervous system is post-syphilitic or not, but whether it is one of true syphilitic inflammation or of a degenerative parasyphilitic nature. Such evidence is of vital importance, for in the case of the former mercury, rapidly but judiciously administered, may be followed by a complete cure, whereas in the latter it will do more harm than good. I will cite a case that was recently under my care.

A woman, aged 34 years, was admitted to Charing Cross Hospital said to be suffering from tabes. She had shooting pains in the legs, unsteadiness in gait and station, a feeling of the soles as if walking on cork, unequal pupils which reacted sluggishly to light and to accommodation, pain and cramp in the muscles of the legs, absent knee-jerks, patches of anæsthesia on the legs, and a belt of thoracic anæsthesia with girdle sensation. After inquiring into the history and finding that she had suffered with headache and squint, that the knee-jerks which were absent on admission had returned a few days later, I came to the conclusion that this woman, with a probable duration of infection of not more than four years, was suffering really from pseudo-tabes, the result of syphilitic meningitis, especially as she told me that she had had a little stiffness in the neck, and I then obtained Kernig's sign. Lumbar puncture was performed, and 390 lymphocytes per cubic millimetre were found—an enormous number for tabes dorsalis. This large number of lymphocytes could only be accounted for by a widespread active gummatous change in the meninges. She was placed on mercurial inunction. The symptoms began to clear up rapidly and a fortnight later the lymphocytes had fallen to 70 per cubic millimetre, and the fluid this time was tested by the Wassermann method, and found to give a negative reaction for both antigen and antibody. Unfortunately, the blood was not tested on this or future occasions. A fortnight later the cerebro-spinal fluid was examined and only 20 lymphocytes per cubic millimetre found, the patient being almost well. A fortnight later still, there were no lymphocytes, and the fluid was negative to the Wassermann reaction. The patient was quite well; the pains, anæsthesia, and unsteadiness had entirely disappeared.

It is of the greatest importance, therefore, to be able to

decide whether a syphilitic patient is suffering from the immediate effects of the syphilitic virus on the enclosing, supporting, and vascular structures with secondary effects on the nervous structures, or from the remote effects of the syphilitic poison upon the bio-chemical stability, and, therefore, durability of the nervous elements themselves. The sooner the nervous affection follows the primary infection the more likely it is to be syphilis of the nervous system; the longer the interval the more likely it is to be parasyphilis, but exceptions occur, especially to the former rule. It is much more common for tertiary syphilitic lesions of the nervous system to arise very long after the primary infection than for tabes dorsalis or general paralysis to occur within a few years of infection. There is no period from the appearance of the primary sore onwards to the end of life in which true syphilitic lesions of the nervous system may not occur. It is very unusual for a generalised syphilitic meningitis to commence after the lapse of five years from primary infection; quite one half of the cases manifest symptoms within the first 18 months, in some the symptoms are obvious with the appearance of the roseolar rash, and a few cases have occurred when the primary sore was yet unhealed—a very different order of things to tabes dorsalis and general paralysis, for in these diseases it is very rarely that symptoms occur in less than four years after infection, and the average time is ten years.

In the case of active syphilitic meningitis, arteritis, and gummata, all of which conditions may occur simultaneously, successively, or progressively over the whole cerebro-spinal axis, the blood will most probably give a positive antigen reaction, the cerebro-spinal fluid will exhibit a great increase of lymphocytes and albumin, but it may give neither antigen nor antibody reaction. The administration of mercury will cause the disappearance of the antigen serum reaction, the disappearance of the lymphocytes from the cerebro-spinal fluid, and the cure, amelioration, or arrest of the symptoms if the disease has not been allowed to progress so far as to lead to thrombosis of vessels and destructive ischæmic softening of the cerebro-spinal nervous substance. In the case of para-syphilis, especially general paralysis, there is a different reaction: the blood serum gives the antibody reaction; the cerebro-spinal fluid both in tabes and general paralysis exhibits lymphocytes and shows the presence of albumin.

CLINICAL DIAGNOSIS.

Neurasthenia.—A neurasthenic, who has had syphilis, and who is suffering with irritability of temper, headache, insomnia, lassitude, loss of memory, who has occasionally difficulty in finding words to express his thoughts, complaining of migrainous or vertiginous attacks and of various cutaneous sensory disturbances, in the form of anæsthesia or paræsthesia, who is hypochondriacal and depressed, who has a mortal dread of softening of the brain, from which some friend of like habits and history has suffered, whose knee-jerks are exaggerated, and whose physiognomy exhibits a wearied, hypotonic, anxious condition, with lack-lustre eyes, will naturally arouse in the mind of the practitioner the possibility of the patient being in the prodromal stage of general paralysis. Examination of the pupils and of the cerebro-spinal fluid with negative results, in conjunction with the absence of any signs of dementia, will usually enable him to decide in favour of neurasthenia and give a favourable prognosis.

Pseudo-general paralysis.—Pseudo-general paralysis (diffuse syphilitic brain disease) is sometimes termed syphilitic general paralysis. I think that this is an unfortunate term to use, because general paralysis is of syphilitic origin and yet is incurable by antisyphilitic remedies. Diffuse syphilitic brain disease is not a primary neuronic decay, but a widespread chronic inflammatory process affecting the enclosing, supporting, and nutrient structures, due directly to the action of the syphilitic virus; instead of occurring, as a rule, many years after infection, the most serious cases commence within the first four years after infection, therefore the average age incidence is some years below that of general paralysis. The early diagnosis of *diffuse cerebral syphilis* is of the most vital importance, for it is amenable to antisyphilitic treatment, which if adopted in its early stages arrests or ameliorates, and occasionally, but rarely, a cure may be hoped for. It is therefore essential to know what are the diagnostic differences of general paralysis and diffuse cerebral syphilis. It is rarely that true general paralysis is associated with permanent coarse obtrusive paralyses; in fact, the term "paresis" expresses the condition more truly. On the other hand, diffuse syphilitic brain disease is very liable to be followed by paralyses of all kinds.

[Dr. Mott here discussed the differential diagnosis of this form of dementia and the dementia characteristic of general paralysis. He continued as follows:—]

The dementia of syphilitic brain disease is partial; it is unequal and elective in its attack, it compromises certain forms of psychic activity, memory, association of ideas, energy and capacity for mental work, rather than diminishing intelligence as a whole. It does not alter so profoundly the character and personality of the individual, nor in the great majority of cases does it destroy the patient's idea of his past and present state, nor that of orientation in time and space. He still possesses the *auto-critical* faculty, and is more or less conscious of and disturbed by his mental deficiency. The accompanying bodily troubles are coarse and obtrusive and due to focal disseminated lesions in the brain and spinal cord, causing apoplectic and epileptiform seizures, as well as various paralyses and sensory troubles. The evolution of general paralysis is slow, insidious, and progressive towards marasmus and death. Syphilitic dementia, especially if it be treated, remains stationary or tends to regression, ending in a state of acquired non-progressive dementia.

Arterio-sclerosis.—Syphilis is probably the most important factor in the production of arterio-sclerosis, especially cerebral arterio-sclerosis. Consequently a patient who has had syphilis may present signs of general arterio-sclerosis in which the vessels of the body generally, and of the brain and kidneys in particular, may suffer. Toxic conditions of the blood may arise in consequence of the latter affection; owing to the renal inadequacy, and probably also the diseased conditions of the vessels of the brain, uræmic symptoms may arise in a person who is suffering with mental symptoms caused by the disease of the cerebral vessels and the altered conditions of the blood. The symptoms of uræmia—namely, headache, pyrexia, twitchings, epileptiform seizures—may simulate the symptoms and seizures of general paralysis. There are, however, points of difference which will enable a diagnosis to be made. In such a case examination of the heart and arteries and the urine would afford information. The pupils in uræmia may have a sluggish reaction to light, but they are rarely unequal or irregular. Very probably examination of the fundus will show retinitis, hæmorrhages, and arterio-sclerosis of the retinal arteries, causing thickening of the walls, which appear like silver wires; consequently the veins as they pass over the thickened arteries often show a kink. The patient is usually over 50 years of age. The cerebral symptoms are often characterised by a progressive dementia and paralysis, but there are many points of difference, both in the mental and motor symptoms.

[Dr. Mott here said that the dementia of cerebral arterio-sclerosis was a partial, unequal loss of mind. The patient became irritable, suspicious, and even dangerous to himself and others, but, unlike a general paralytic, he retained his notions of personality and the faculty of auto-criticism, and was more or less conscious of his loss of memory and mental enfeeblement.]

Chronic alcoholism.—Cases of chronic alcoholism in which there is a history or signs of syphilis frequently offer many difficulties in the matter of diagnosis. They do so for many reasons: first, because many paralytics in the early stages of the disease take to drink. The symptoms they present are largely due to the effects of the intoxicant, and they are certified and sent to the asylum, where the diagnosis of *mania a potu* is made. The true nature of such a case declares itself after the effects of the alcohol have had time to wear off. Hallucinations, especially of vision and of a terrifying nature, are common in alcoholism; they are not common in general paralysis uncomplicated by alcoholic intoxication. The dementia of alcoholism is characterised by the predominance of the moral affective defects over the intellectual, by a degradation of the ethical sense, deterioration of will, and the tendency to delusions of persecution, jealous suspicion, and violent motor reactions, rendering them dangerous to themselves and others. The psychic activity is confused rather than destroyed. There is deficiency rather than absence of memory.

Polyneuritic psychosis (*Korsakow's disease*).—The clinical picture of a severe case of the disease is not unlike that of

general paralysis in its final stages. The patient, prostrate, bedridden, and emaciated, with contracted limbs and suffering with bedsores, lies oblivious to her surroundings; roused to reply to questions, only incoherent responses are obtained. Such a condition may well be termed *pseudo-general paralysis*. Frequently a definite diagnosis cannot be made unless the case be watched; if this be done occasionally at intervals the mind appears to be clear in Korsakow's disease. The definite signs and symptoms of polyneuritis may be present. When the symptoms of Korsakow's disease are confined to loss of memory and mental confusion the diagnosis is more difficult. Auto-criticism may still be present in the patient suffering with Korsakow's disease; consequently, when confronted by her mental shortcomings she betrays astonishment and even alarm in her facial expression. The general paralytic, having lost the faculty of auto-criticism, is self-satisfied, and the expression is one of foolish contentment or of apathetic indifference. Hogarth, in the scene of "The Rake's Progress at Bedlam," nearly one hundred years before the classical description by Bayle, portrayed the general paralytic with his grandiose delusions and lack of auto-criticism. In the picture we see the man, partly naked, seated on a stool, a paper crown on his head, a wooden sceptre in his hand, and a foolish, self-satisfied mock majestic smile on his countenance. The cerebro-spinal fluid in Korsakow's disease would be negative as regards the antibody reaction and lymphocytosis; therefore in all doubtful cases lumbar puncture should be performed and the cerebro-spinal fluid examined.

Dementia præcox.—The age, mode of onset, and evolution of this disease are unlike those of general paralysis, except the juvenile form. In 80 per cent. of the cases of dementia præcox the mental symptoms occur before the age of 25. There is usually a strong hereditary history of insanity, and no history or signs of congenital syphilis. General paralysis is a disease which, on an average, does not commence until ten years after infection; therefore the most frequent period for general paralysis to occur is not adolescence, but the prime of life. Occasionally, however, I have seen young women admitted to the asylum with dementia paralytica in whom the mental affection commenced at a relatively early age. Inquiry into the history often shows that they were prostitutes or had come from a refuge home, or a history of congenital syphilis was either certain or probable. Dementia is not the earliest sign of this affection, but hallucinations and fragmentary delusions; the Argyll Robertson pupil is not present, the pupils are not unequal, and, as a rule, not irregular. If there is any doubt the diagnosis can at once be settled by examination of the blood and cerebro-spinal fluid by the Noguchi and Wassermann methods, and by cyto-diagnosis of the cerebro-spinal fluid. 20 successive cases of dementia præcox were examined by Mr. G. H. Harper-Smith and Dr. G. H. Rae Gibson in the laboratory, and in every instance the result was negative.

Disseminated sclerosis.—The typical insular sclerosis of young adults should not be mistaken either for general paralysis or multiple syphilitic brain disease, although cases of multiple focal patches of sclerosis, the result of syphilitic arteritis, thrombosis, and ischæmic softening, in many respects resemble that form of insular sclerosis the cause of which is at present unknown. The difference in the clinical symptoms and the evolution of the disease to general paralysis in most cases suffices for a differential diagnosis; but if there be any doubt, examination of the cerebro-spinal fluid and blood with negative results will serve to exclude general paralysis.

Cerebral tumours.—Cerebral tumours without motor or sensory troubles are not infrequently sent to asylums and, according to my experience, they are as often as not called "general paralytics." Examination of the fundi in most cases would have revealed optic neuritis, a condition never found in general paralysis, although it may occur in syphilitic brain disease; but as a rule, according to my experience, syphilitic gummata and syphilitic meningitis do not produce the same degree of swelling of the disc that non-syphilitic tumours do; very much, however, depends upon the situation and the rapidity of growth of the tumour. Large slow-growing tumours of the frontal lobe occurring in men at the prime of life, and with a history of syphilis and drink, may be especially difficult to differentiate from the slow demential form of general paralysis; especially is this so when the tumour destroys the left frontal lobe and irritates the adjacent motor cortex, as it would cause speech affections from the involvement of Broca's convolution and epileptiform seizures. I saw recently a woman in one of the London County Asylums and had her transferred to Charing Cross Hospital. Mr. E. T. Collins found five diopters of swelling in each disc. After a course of mercurial treatment the swelling went down rapidly to two diopters, and from being unable to read large print, she could read quite small print, the headache ceased, and the vomiting no longer occurred. The cerebro-spinal fluid of this case did not give the Wassermann reaction, although it contained a considerable excess of lymphocytes; but then we know that in only about 25 per cent. of cases of syphilitic brain disease does the cerebro-spinal fluid give a positive antibody result. [Dr. Mott here said that lymphocytosis by itself was not sufficient evidence to prove that the disease was syphilitic, but the result of treatment combined with this made it fairly certain that it was a syphilitic gumma that caused the symptoms in this case.]

EXAMINATION OF THE CEREBRO-SPINAL FLUID.

The Wassermann-Neisser-Brück method.—This test may be carried out in the following manner. It is necessary first to immunise an animal against the blood corpuscles of some other animal—for example, by injecting the blood corpuscles of an ox into the circulation of a rabbit. After several injections the blood serum of the rabbit becomes hæmolytic to the blood corpuscles of the ox by virtue of the presence in the serum of an immune body *plus* the normal complement or cytase. The latter is removed from the serum after withdrawal from the rabbit by heating to 56° C. for 30 minutes. There is then left in the rabbit's serum the immune body, which by itself will not dissolve the red blood corpuscles of the ox. The addition, however, of a small amount of guinea-pig serum which contains complement will at once restore its hæmolytic properties. The actual experiment consists in mixing the serum or cerebro-spinal fluid to be examined in varying dilutions with a watery or alcoholic solution of the liver of a syphilitic fœtus; a small amount of the serum of a guinea-pig is added, and the bulk made up to a constant volume (about two cubic centimetres) with saline solution. The series of tubes containing these mixed solutions are placed in an incubator at 37° C. for one hour, and then the sensitised corpuscles are added. By sensitised corpuscles I mean the washed corpuscles of the ox to which has been added the heated rabbit's serum. The mixtures are again placed in an incubator for two hours at 37° C., then removed and placed on ice over night. The next morning the amount of hæmolysis in each tube can be estimated. If, on the one hand, antigen (contained in the extract of the syphilitic liver) and antibody (in the serum or cerebro-spinal fluid) have been present they have united with the complement (provided by the guinea-pig serum), and no solution of the corpuscles will have taken place, because the complement has been fixed before the addition of the sensitised corpuscles. If, on the other hand, the antibody was not present in the serum or cerebro-spinal fluid, then the complement in the guinea-pig serum has remained free to act on the sensitised corpuscles and to lead to their solution (hæmolysis). A control experiment using normal serum or cerebro-spinal fluid—namely, one which contains no antibody—must be made at the same time. In order to make the *antigen* test, the blood serum or cerebro-spinal fluid is used in place of the syphilitic liver extract, and tested in varying dilutions against a serum or cerebro-spinal fluid which has previously been proved to contain antibody in known amount.

The Noguchi method.—A simple method introduced by Noguchi consists in boiling two parts of the cerebro-spinal fluid with five parts of a 10 per cent. solution of butyric acid in saline solution for a few seconds and then adding one part of a normal sodium hydrate solution and again boiling briefly. A flocculent or granular precipitate is obtained on standing in parasyphilitic affections due to the presence of a globulin. The test is useful in distinguishing general paralysis from other forms of insanity not associated with meningo-encephalitis.

Cyto-diagnosis.—The number of leucocytes present in the cerebro-spinal fluid may be estimated approximately by the following methods. 1. A drop of the fluid which has been previously well shaken is placed in the chamber of a Thoma-Zeiss hæmocytometer and the cells allowed to settle. The number of cells lying over the 400 squares of the chamber

multiplied by 10 will give the number of leucocytes in one cubic millimetre of the fluid. 2. The cerebro-spinal fluid is centrifuged and the supernatant fluid poured off. The residue is removed in a capillary pipette, blown on to a slide, and allowed to dry. Stained with Leishman or Jenner's stain the residue from a normal cerebro-spinal fluid will show at the most only two or three lymphocytes in the field with a magnification of 400 diameters, whereas in progressive parasyphilitic affections the lymphocytes are markedly increased in number.

An Address
ON
THE OPERATIVE TREATMENT OF FRACTURES.

Delivered before the American Medical Association, Atlantic City, New Jersey, U.S.A., on June 9th, 1909,

BY W. ARBUTHNOT LANE, M.S. LOND., F.R.C.S. ENG.,

SURGEON TO GUY'S HOSPITAL; SENIOR SURGEON, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET, LONDON.

GENTLEMEN,—I hope to put before you clearly and briefly my views and experience of the treatment of simple fractures.

I was originally led to resort to operative procedures by finding from the dissection of bodies whose bones had sustained fractures that the fragments when displaced had hardly ever united in anything approaching accurate apposition, and that definite changes took place in those joints whose functions were affected by the alteration in the physiology of the skeleton resulting from such imperfect replacement of the broken fragments.

A careful inquiry into the results of the treatment of fractures by splints and manipulation confirmed the experiences of the dissecting-room, and showed that the consequent joint changes meant depreciation in physique and in the wage-earning capacity of those who had to engage in laborious pursuits. These views met with violent opposition till the discovery of x rays proved that the first contention was true, while the law courts are steadily impressing on the profession in a costly manner the disabilities which are associated with imperfect restoration in the form of broken bones.

In 1894 I read before the Clinical Society of London my first paper on the results of the treatment of simple fractures by operation, and I contrasted them with those obtained by other means. Since that time I have continued to operate on all simple fractures in which I was unable to bring the fragments into satisfactory opposition when the circumstances of the patient required it. During the last 17 years I have operated upon a very large number of recent fractures at all ages, from early infancy to extreme old age, with the same uniform success. I have employed various methods at different times, endeavouring to devise means of fixation of the fragments in accurate apposition which shall be at the same time effectual and easy of application. I soon recognised that if the treatment by open operation was to become general it was necessary that the procedure should be rendered as uncomplicated as possible.

The difficulty that has beset this treatment is that if a foreign body is left in a wound the surgeon must be infinitely more careful about asepsis than he is in the ordinary course of events, and in a degree proportionate to the bulk of the foreign body. Judging from what I have read on the subject it would also appear that the methods of the antiseptic surgeon, as contrasted with those of the surgeon who practises asepsis, are prejudicial to success. It is because of insufficient aseptic precautions, and to some extent from a want of familiarity with the use of wire, screws, &c., that we hear so many complaints of the development of rarefying osteitis, about a screw or wire perforating a bone, of screws working loose and consequently becoming ineffective for the purpose for which they were employed, and of the employment of such futile methods as ivory pegs, &c. With the exercise of greater cleanliness and with an increasing manual dexterity these troubles will cease to arise. Why a surgeon should not be governed by the same principles by which an ordinary skilled mechanic works I cannot understand, but I presume that the surgeon has rarely had any such training as would fit him for this kind of work Curiously enough, the opposition to such operative procedures, which continued with such intensity for so long, seems to have suddenly diminished because several surgeons have broken loose from tradition and have satisfied themselves that by operation alone can the greatest measure of success be obtained.

I do not propose to discuss the various methods which I have adopted for retaining the fragments immoveably in accurate apposition, but will confine myself to describing those which I now find most effective for the purpose.

The locality of the incision should be carefully chosen to avoid damage to important structures, and especially to nerves, and to reduce to a minimum the chance of subsequent infection of the wound. In the lower extremity there is no risk of danger to important vessels, tendons, or nerves, but in the arm the conditions are very different and every precaution must be taken.

To ensure asepsis, which one can do with certainty, an incision of ample length is made. Several folds of gauze are attached to the edges of the skin incisions by means of fenestrated forceps specially constructed for the purpose. They are long and heavy enough to fall away from the wound and do not require to be held. The forceps used to control hæmorrhage exert pressure upon the bleeding vessels sufficient to permanently obliterate their lumen. By their use the necessity of the introduction of the gloved hand into the wound for the purpose of tying a ligature is avoided. The danger of the rubber glove is the possible presence of a puncture through which infection might enter the wound. The hæmostatic forceps are very long, so that the handles fall free of the wound. All instruments employed for manipulating fragments, holding swabs, plates, and screws, drilling bones, and driving in screws are also very long and very powerful in order to avoid any contact of the portion of the instrument grasped by the hand with the wound, since the gloves are liable to be damaged in the powerful manual efforts which are sometimes necessary to restore the broken bone to its original form.

In considering the means by which accurate apposition of fragments is effected we must take into account the nature of the fracture and whether one or two bones are involved. Besides this, comminution often adds greatly to the difficulty of the operation. In torsion fractures the surgeon must remember that in proportion to the overlapping of the fragments so there exists between and separating the surfaces which have to be brought into apposition an increasing quantity of muscle, since the chisel-shaped fragments diverge from one another as they overlap, burying themselves in the surrounding soft parts. Anyone imbued with the old creed and unfamiliar with operations on recent fractures would imagine that to effect apposition all that is necessary is to exert traction upon the distal fragment of the broken bone by pulling on the limb, the trunk being secured, and that by means of this traction the fragments can be drawn from their beds in the soft parts and the fractured surfaces placed in accurate contact. In the case of spiral fractures of the long bones of the lower extremity, in which this variety of fracture is the most common, no amount of traction which can be exerted on the limb is sufficient to overcome the overriding of the fragments. This is due to the resistance offered by the bruised and swollen soft parts which surround the fractured bone and from the point of view of traction on the limb form inextensile ties in its length. This applies equally to fractures produced by direct injury, the resistance to replacement varying with the extent of overlapping of the fragments, the amount of extravasation of blood, the laceration of soft parts, and the consequent inflammation.

To effect apposition in the spiral fracture it is necessary to divide or displace all soft parts intervening between the fragments, to carefully clean away any clot or soft tissues from the fractured surfaces, and especially from the retreating angles of the fragments, and to exert traction on the limb, supplementing that traction by forcible apposition of the fragments by powerful forceps, which are so manipulated as to glide the inclined plane of one fragment upon the other. This gliding of the fragments is facilitated by the introduction of a narrow flat blade with a serrated edge to prevent it slipping between the fragments which when rotated upon its axis by its powerful leverage action moves

the fragments held together by the forceps upon one another.

In the case of a fracture of a single bone as the femur which has been broken by direct injury, the extent of the overlapping of the fragments is, from the nature of the injury and the mode of causation of the fracture, usually much less. Still the damage sustained by the surrounding soft parts or ties in the length is correspondingly greater, since in the torsion fracture the injury which the muscles sustain results solely from the fracture, while in that produced by direct injury the soft parts are lacerated and bruised by the impact of the force which determined the fracture and only to a small extent from the forcible displacement and overlapping of the fragments.

In a fracture of the femur produced by direct injury traction alone exerted on the limb does not appear to influence the overriding of the fragments. The fragments can most readily be brought into apposition by so manipulating the limb that the extremities of both fragments are made to protrude through the incision, and can be manipulated till the inner margins of the fractured surfaces are brought in contact with one another. Each fragment is grasped with forceps, and while the limb is slowly and steadily extended the opposing edges of the ends of the fragments are levered on one another till the broken surfaces come into accurate apposition, when the axes of the fragments are in continuity and the bone is restored to its normal form. This difficulty does not exist to the same extent in fractures of the upper extremity produced by direct injury, since the ties in this limb are less bulky and tense than in the leg, and from the nature of things spiral or torsion fractures are of comparatively rare occurrence in the humerus, radius, or ulna, though they are not infrequent in the metacarpals.

The difficulty of effecting accurate apposition is very greatly increased by the presence of comminution which can make a considerable demand on the skill and ingenuity of the surgeon. This complication produces most obstacles in the case of the spiral fractures, since every aspect of the fragments is very oblique and much is necessarily out of sight, and there is no surface or point on which one fragment may be made to impact on the other. Perhaps the most awkward complication one may have to meet is great fragility of the fragments, such as appears to exist to a great extent in alcoholics and to a lesser degree in feeble children and in old age, but this concerns the retention of the fragments in apposition rather than their reduction.

Delay in operating renders the replacement of the fragments more difficult, because the shortened soft parts or ties become rapidly less extensile, and a correspondingly greater force is required to stretch them. This is a serious matter if the bones are fragile or comminuted. The operation should be undertaken as soon as the skin can be effectually cleansed.

As to the best means of retaining fragments securely in apposition when the fractured bone has been restored to its normal form, I would point out that in certain fractures, as in those about epiphysial lines, there is usually no tendency to a recurrence of the displacement once reduction has been effected, providing the part is put up in a position the reverse of that in which it was produced. For instance, in a Colles's fracture either through bone or through the junction of the shaft with the epiphysial line, after replacement of the fragment by manipulation or operation the hand is retained in a position of extreme flexion and adduction, which is also the extreme position of usefulness. It is well to remember that if the surgeon has to employ any means for retaining an epiphysis in position—as, for example, in separation of the lower epiphysis of the femur—he should insist on the removal of the rigid connecting medium after union has been effected; otherwise it will control the growth in the epiphysial line and deformity will result. In a case of a complicated fracture through the inner half of the epiphysial line of the lower end of the femur, objection was made to the removal of the staples which were employed to retain the fragment in position because of the condition of the patient. Later this patient developed a bowed leg.

There are occasions on which it is necessary to rely on screws alone, as in the case of fractures of the neck of the femur and in some spiral fractures, but in the vast majority of cases I prefer to use as long and as strong a steel plate as possible, carrying as many screws as space permits. To reduce the difficulty of finding the drill-hole in the distal compact layer of bone, which is frequently of no avail when the fragment is comminuted, I employ screws of a length only sufficient to engage the proximal compact tissue and threaded up to the head in order to secure as firm a hold as possible on the bone. For this purpose I use screws in two lengths—½- and ⅝-inch—and in two gauges—Nos. 5 and 7. In the young infant I employ ⅜- and ½-inch screws in No. 3 gauge. The fewer the varieties of screws employed the smaller is the number of drills, and consequently the less complicated the operation, since each gauge of these modified screws requires only one drill. By this means I have reduced enormously the difficulties of securing the fragments immoveably in apposition. In simple fractures I hardly ever use wire. I would exclude from this the fractures of infancy when two or more weeks have been allowed to elapse between the receipt of the injury and the operation. In such cases the distal fragment loses its density at a very early period, and while the proximal fragment will hold the screw securely the thread will get no secure grip of the distal portion because of its friability. In these circumstances I supplement the junction by encircling the plate and distal fragment with a loop of silver wire.

The operative measures which are required in the treatment of badly united fractures are similar, except that the fragments have to be cut through in two distinct planes in fracture of a single bone and in four planes in fracture of two bones, such as the radius and ulna or tibia and fibula, in order that the axes of the fragments can be rendered continuous. These operations are very much more difficult and are accompanied with more risk from hæmorrhage than are recent fractures. The results obtained are also very rarely as good because of the changes which develop in the joints whose functions have been affected by the faulty junction. I think that with better initial treatment such cases will soon cease to exist.

Whatever the extent of the shortening in badly united fractures, the surgeon should endeavour to correct it entirely or to reduce it as much as possible. There is, as far as I am aware, no limit to which the muscles, nerves, vessels, &c., can be stretched if only sufficient force can be exerted on the fragments. Such operations may make a very great demand on the skill and resources of the surgeon, and an increasing familiarity with them will enable him to obtain an increasing measure of success.

A PRELIMINARY NOTE ON THE VACCINE-THERAPY OF ENTERIC FEVER.

BY D. SEMPLE, M.D., M.CH.R.U.I., D.P.H. CANTAB.,
LIEUTENANT-COLONEL, R.A.M.C. (RETIRED); DIRECTOR, CENTRAL RESEARCH INSTITUTE FOR INDIA, KASAULI, PUNJAB, INDIA.

MY attention was first drawn to the possibility of using a bacterial vaccine in the treatment of enteric fever from a remark made by Sir A. E. Wright in a lecture given by him under the auspices of the Chelsea Clinical Society, London, and reported in the *Clinical Journal* of May 6th, 1906. Wright suggested that the results obtained by M. Chantemesse in exploiting an antityphoid serum were probably due to a typhoid vaccine in disguise; or in other words, that the antiserum used probably contained bacterial elements derived from the cultures originally injected into the horses which supplied the serum.

The subject of vaccine-therapy in cases of enteric fever was referred to by Lieutenant-Colonel C. Birt, R.A.M.C., in an article by him in the *Journal of the Royal Army Medical Corps* for September, 1906. Birt in his review recommended the inoculation of one-fiftieth of the dose of vaccine used in preventive inoculations, and that the blood changes should be studied either by opsonic index determination or by Bordet's and Gengou's reaction of fixation of complement. He also advised that the site of injections should vary; no part should be twice inoculated. He did not record any cases treated by himself, but mentioned that C. Fraenkel had treated some 57 cases as long ago as 1893.

The therapeutic application of this method to the treatment of enteric fever is as yet practically unexploited, but judging from the results obtained in the few cases which I have treated, the method is worthy of careful consideration, and may possibly be the means of greatly diminishing the death-rate from this disease.

The principle which underlies the application of prophylactic bacterial vaccines also applies to therapeutic vaccines. This principle consists in setting in motion the machinery which elaborates the products of immunisation. In vaccine-therapy one of the most important points connected with the elaboration of these immune bodies is that it should take place before marked necrotic changes have taken place in the tissues and organs affected; hence the necessity for treatment as early in the disease as possible. In the practical application of this object to a septicæmic disease like typhoid fever the production of a cumulated positive phase is important. Our aim should be to follow up the positive phase response without calling into existence any perceptible negative phase. It is very evident that we are not likely to attain this object by using large doses, or even moderately large doses, giving rise to marked constitutional symptoms and a consequent negative phase superimposed upon the disease from which the patient is already suffering; we are more likely to attain our object by using small doses of a vaccine prepared from the strain of bacteria responsible for the patient's disease, and only just sufficient to produce a response without producing any registrable negative phase. When the dose is regulated on these lines a positive phase only is registered, and a phagocytic response takes place soon after the inoculation.

Wright[1] obtained evidence of increased bactericidal power in the blood of persons inoculated with an antityphoid vaccine on the day following inoculation; also evidence of increased phagocytic response on the day following the inoculation of a staphylococcus vaccine. In numerous cases he obtained evidence of an increased opsonic power of the blood within one hour after the inoculation of a tubercle vaccine. Allen[2] has in several instances obtained an increased opsonic index within 24 hours after the inoculation of bacterial vaccines; and in one case, after the therapeutic inoculation of 250,000,000 organisms prepared from a culture of the micrococcus catarrhalis, he obtained an opsonic index of 1·57 within eight hours; and indices of 2, 2·23, and 2·32 within 12, 15, and 18 hours respectively. It is true that in these examples of a quick response the causal micro-organisms are more or less localised, and to some extent shut off from free access to the lymph and blood streams, and it is in cases of this kind that bacterial vaccines are believed to give the best results; but latterly several successful results have been recorded by Wright and others in cases of streptococcal septicæmias.

Typhoid fever being a general septicæmia in addition to having localised foci when the causal micro-organisms multiply, there are no *a priori* reasons why the principles of curative vaccination, which have been successfully applied to other septicæmic diseases and localised infections, should not hold good in this disease. The conditions which obtain in a case of enteric fever are not favourable for the rapid production of protective substances, because the specific bacterial elements are being constantly introduced into the blood stream, where they are killed off and diluted to such an extent that when they come in contact with the tissues which elaborate bacteriotropic substances a feeble response only can take place. In these circumstances a toxic effect may be the most prominent symptom, and as a matter of fact, it often is in many cases of enteric fever.

When the same bacterial elements are introduced subcutaneously in the form of a vaccine and in appropriate doses the toxic effects are a negligible quantity, and mainly localised to the vicinity of the inoculation. The bacterial elements are brought directly in contact with the tissues which respond by the elaboration of protective substances. An increase of thermostable opsonins may be taken as an index of the immunising response taking place during an attack of enteric fever, and it may also be taken as an index of the increased immunising response stimulated by the vaccine treatment of this disease.

There is at present a general consensus of opinion that autogenous vaccines give rise to better results than stock vaccines. The results achieved in the two cases (Nos. 8 and 9) treated with vaccines prepared from their own micro-organisms would seem to point towards a justification of this opinion. Of the nine cases here recorded seven were treated with a stock vaccine prepared from one strain of bacillus typhosus, and two with autogenous vaccines. The vaccines were prepared from a 48-hours' broth culture killed by the addition of 0·5 per cent. carbolic acid; standardised by counting after the dilution of a measured quantity (in accordance with methods devised by Sir A. E. Wright) and sterility tested in the usual way. It was found that the addition of 0·5 per cent. carbolic acid could be relied upon to give a sterile vaccine within 24 hours without any previous heating. This method of sterilisation is now used at the Central Research Institute, Kasauli, in the preparation of antityphoid vaccine sent out for preventive inoculations, the possible harmful effects of heating being avoided.

From a practical experience of the use of this particular strain of bacillus typhosus in prophylactic inoculations, and judging from the blood changes and reactions following its use, 0·5 cubic centimetre was found to be a suitable first dose, and 1 cubic centimetre a suitable second dose. These quantities corresponded to 270,000,000 and 540,000,000 bacilli respectively. In the therapeutic application of the vaccine it was deemed advisable to give doses not likely to cause any apparent constitutional disturbance. In the first few cases treatment was commenced by giving 6,000,000 bacilli, about a forty-fifth of the first prophylactic dose. In the other cases the doses varied from 8,000,000 to 12,000,000 bacilli, and in two cases 30,000,000 and 40,000,000 bacilli were given. The vaccine was always given in a bulk of one cubic centimetre, which was easily arrived at by diluting the original vaccine with normal salt solution, so that one cubic centimetre corresponded to the number of bacilli to be given.

The front of the chest about four inches below the centre of the clavicle was the site selected for the injections, and no two inoculations were given in exactly the same place, a practice which was based on the assumption that the bacteriotropic substances resulting from the inoculation of bacterial vaccines are probably formed in the tissues at the site of the inoculations.

The technique employed in testing the phagocytic response was practically similar to that used by Sir A. E. Wright in his opsonic experiments. It was necessary to use a diluted serum in order to obtain a more exact measure of the increase in thermostable opsonins, as indicated by an increase in the phagocytic response of those inoculated. Unless the serum had been diluted it would have been impossible to accurately count the bacilli taken up by the phagocytes in some of the cases treated.

Technique.

1. *Serum.*—Blood from the finger was drawn off into glass capsules and allowed to stand at room temperature for 24 hours, when the clear serum was pipetted off and diluted 1 in 5 with sterile normal salt solution. The diluted serum after being filled into glass pipettes and sealed was heated in a water bath at a temperature of 58° C. for 15 minutes, so as to eliminate the thermolabile opsonins and complement. It was then ready for use. The control serum was from a healthy laboratory attendant and prepared in the same way.

2. *Blood corpuscles.*—One volume of blood was drawn off from the finger of a healthy man and mixed with an equal volume of 1·5 per cent. sodium citrate in normal salt solution. The mixture was then centrifuged and the supernatant clear fluid drawn off with a pipette. The corpuscles were then well mixed with an excess of normal salt solution, and again centrifuged and the supernatant fluid drawn off. This process was repeated three times. The washed corpuscles were now gently mixed so as to give an even distribution of the white cells.

3. *Bacterial suspension.*—A platinum loopful from the surface of an 18 hours' agar growth of bacillus typhosus was well emulsified in normal salt solution and allowed to stand upright in a piece of glass tubing about a quarter of an inch in diameter, sealed at one end, and resembling a small test tube. It was allowed to stand in this position while the serum dilutions and washed corpuscles were being prepared. Care was taken to make the suspensions as nearly as possible of the same strength each time and when used one volume was drawn off from the upper part of the fluid in the tube. The same strain of bacillus typhosus was used for the opsonic and agglutination tests throughout these experiments.

4. *Dilutions employed.*—Heated serum dilution (1 in 5), two volumes; washed corpuscles, two volumes; and bacillus typhosus suspension, one volume. These proportions gave a

[1] Principles of Vaccine Therapy, a lecture delivered before the Harvey Society, New York, by Sir A. E. Wright.
[2] Vaccine Therapy and the Opsonic Method of Treatment, second edition, 1908 (London: H. K. Lewis).

final serum dilution of 1 in 12·5. After being well mixed by filling and refilling several times into a glass pipette the end of the pipette was sealed off and the mixture placed in the incubator for 15 minutes at a temperature of 37° C. It was then taken out of the incubator, the end of the pipette snipped off and the contents again well mixed, and films made and stained in the usual way. When counting only polymorphonuclear corpuscles were noted; a note was also made of the corpuscles which showed no phagocytosis. Some workers attach more importance to the percentage of negative corpuscles than to the phagocytic index as indicated by the average number of bacteria ingested. On this account I decided to record the results in both ways.

It is well to bear in mind that the opsonic content of an enteric fever patient's blood may vary considerably from day to day irrespective of treatment by vaccination. A normal person's opsonins may also fluctuate from day to day, but, generally speaking, they remain at a lower ebb than in the case of a patient who is successfully struggling to rid himself of a bacterial infection, or who is being assisted in his efforts to produce bacteriotropic substances by means of vaccination.

In the application of this method of treatment the guiding principles should be to avoid the production of any apparent constitutional disturbance, and to follow up the positive phase as indicated by an increase of opsonins in the patient's serum. On these points much yet remains to be observed, and further experience is required to decide the most efficient dosage and interspacing of doses.

Judging from the manner in which Cases 8 and 9 responded to the treatment I would recommend when possible a vaccine prepared from the patient's own infecting micro-organism, to be given as early in the disease as possible, and in doses of from 15,000,000 to 30,000,000 of bacilli daily, for from four to six days in succession, a fresh site to be selected for each injection, and the opsonic index to be tested daily. Any lowering of the phagocytic response or other untoward constitutional effects would indicate that benefit was not being derived from the inoculations, and in the event of this occurring an interval should be allowed to elapse until the opsonic content of the blood became increased.

The quickest method of obtaining the bacillus typhosus or paratyphosus for the preparation of an autogenous vaccine is to make a cultivation from the patient's blood. This is best done by drawing off a few cubic centimetres of blood from the median basilic vein of the arm by means of a sterile needle and syringe, using aseptic precautions, and immediately transferring the contents of the syringe to 20 or 30 cubic centimetres of Conradi's bile medium, or to the same amount of sterile ox bile. The blood-infected bile medium should be incubated for from 16 to 24 hours at 37° C., and subcultures made on to one or two agar slopes. When the agar slopes have been incubated for 24 hours at 37° C. any growth present is tested for purity, and also as to whether it is a typhoid or paratyphoid A or B growth. Having cleared up these points, a few broth tubes may be inoculated from the pure agar growth, and after 24 hours' incubation at 37° C. a vaccine can be prepared and standardised in the usual way. Counting from the time the sample of blood is taken from the patient it is possible to have a vaccine prepared by this method on the third day, or on the second day by utilising the first agar growth obtained from the bile medium.

While the autogenous vaccine is being prepared treatment should be commenced by using a stock vaccine, and then carried on with the vaccine prepared from the patient's own micro-organism as soon as possible.

Where facilities for the preparation of a vaccine from the patient's own micro-organism are not available a stock vaccine could be used. The vaccine used for the prophylactic inoculations could be diluted with sterile normal salt solution, so that one cubic centimetre contained the number of bacilli suitable for a therapeutic dose. In the absence of facilities for carrying out opsonic tests, Widal's reaction in conjunction with the general condition of the patient might be taken as guides to dosage, interspacing of doses, and the continuance of treatment. During vaccine treatment there is no necessity to alter or interfere with any ordinary symptomatic or general treatment usually carried out. In the cases here recorded the usual treatment was not in any way interfered with.

Of the 11 cases, details of which are given, nine were treated with vaccines—viz., seven with stock vaccines and two with autogenous vaccines (vaccines prepared from their own infecting micro-organisms). Two of the 11 patients did not wish for vaccine treatment. One of the untreated patients died. All those who received vaccine treatment made a good recovery. The bacillus typhosus was isolated from the blood early in the disease in every case. My thanks are due to Captain E. D. W. Greig, I.M.S., for much assistance in making cultivations from the blood, and to Captain D. S. Harvey, R.A.M.C., for valuable help in testing the opsonic index in several of the cases detailed in Appendix I.

Conclusions.

1. It will be seen that the administration of bacterial vaccines in cases of enteric fever is a practical method of increasing the bacteriotropic substances in the blood, as evidenced by an increase in the opsonic index of those treated by this method.

2. When appropriate doses are given the method is devoid of all risks, is easily carried out, produces no apparent disturbance in the patient's condition, and does not interfere with any other treatment the physician may deem necessary.

3. It would not be possible to generalise from the few cases here recorded as to whether vaccine treatment has a marked effect in cutting short the fever period. Cases 3 and 4 treated with stock vaccine, and Cases 8 and 9 treated with autogenous vaccines, would seem to indicate that it may have this effect.

4. In six of the nine cases treated well-marked improvement set in after the inoculations. This was especially the case in Nos. 8 and 9 treated with autogenous vaccines. In the remaining three there was an amelioration of the clinical symptoms.

APPENDIX I.

Details of the 11 cases of typhoid referred to in the foregoing note, showing the dates and results of (1) cultivations made from the blood; (2) inoculations of vaccine; (3) opsonic tests; and (4) agglutinating reaction of the serum on bacillus typhosus. In all these cases the bacillus typhosus was isolated from the blood on the first attempt. A few cubic centimetres of blood were drawn off by means of a sterile needle and syringe and under strict aseptic precautions from a vein of the arm in front of the elbow, and immediately transferred to either a small bottle or small flask containing 30 cubic centimetres of Conradi's bile medium. The blood-infected bile medium was then incubated for 24 hours at 37° C. and subcultures made on to agar slopes, with the result that a pure culture of bacillus typhosus was obtained from every case.

CASE 1. *Treated with stock vaccine.*—Private ——, aged 25 years. Total service two years. Admitted to hospital on Dec. 14th, 1906. Disease, enteric fever. Dec. 17th: A cultivation made from the blood gave a pure growth of bacillus typhosus. 18th and 26th: First and second inoculations of vaccine respectively, 6,000,000 bacilli. Opsonins not tested.

Agglutinating Reaction of Serum on Bacillus Typhosus.

Date.	Serum dilutions.					Remarks.
	10	20	40	80	160	
Dec. 18th, 1906 (before inoculation).	+	+	+	+	±	No reaction on paratyphosus A or B.
Dec. 25th.	+	+	+	±	—	8 days after first inoculation.
Jan. 23rd, 1907.	+	+	+	+	—	4 weeks after second inoculation.

Remarks.—The disease in this case ran a mild course. No constitutional disturbance produced by the inoculation. There were no complications.

CASE 2. *Treated with stock vaccine.*—Private ——, aged 24 years. Service two years and 10 months. Admitted to hospital Dec. 31st, 1906. Disease, enteric fever. Dec. 31st: Agglutinating reaction of serum on bacillus typhosus 1 in 40 complete; 1 in 80 incomplete. No reaction on paratyphoid A or B. A cultivation made from the blood gave a pure growth of bacillus typhosus. Jan. 2nd, 3rd, and 5th, 1907: First, second, and third inoculations respectively, 6,000,000 bacilli. Thermostable opsonins tested only when patient had been convalescent for two and a half months. April 11th: 50 cells = 85 bacilli, average = 1·7; negatives = 34 per cent. Not much above what one would expect in some normal men. A cultivation made from fæces on Jan. 9th; negative.

Agglutinating Reaction of Serum on Bacillus Typhosus.

Date.	Serum dilutions. 10	20	40	80	160	Remarks.
Dec. 31st, 1906 (on admission).	+	+	+	±	—	No reaction on paratyphoid A or B.
Jan. 2nd, 1907.	+	±	—			Before first inoculation.
,, 3rd ,,	+	+	+	—		24 hours after first inoculation.
,, 5th ,,	+	+	+	±	—	2 days after second inoculation.
,, 23rd ,,	+	+	+	±	—	18 days after third inoculation.

The disease ran a mild course; no complications.

CASE 3. *Treated with stock vaccine.*—Corporal ——, aged 21 years. Service two and a half years. Admitted to hospital Feb. 25th, 1907. Disease, enteric fever. Feb. 28th: Agglutinating reaction of serum on bacillus typhosus 1 in 160 complete. No reaction on paratyphoid A or B. A cultivation made from the blood gave a pure growth of bacillus typhosus. March 1st, 2nd, 3rd, and 4th: First, second, third, and fourth inoculations respectively, 6,000,000 bacilli. 11th: Temperature normal. Thermostable opsonins not tested before inoculation, and not until the ninth day after his last inoculation. 13th (nine days after fourth inoculation): 14 cells = 210 bacilli, average = 15; negatives = *nil*. Control 36 cells = 50 bacilli, average = 1·4; negatives = 50 per cent. 24th (20 days after fourth inoculation): 50 cells = 116 bacilli, average = 2·3; negatives = 20 per cent. Control 50 cells = 8 bacilli, average = 0·16; negatives = 80 per cent. April 11th: 100 cells = 1101 bacilli, average = 11; negatives = *nil*. Control not tested. 29th: 40 cells = 300 bacilli, average = 7·5, negatives = *nil*. Control 50 cells = 40 bacilli, average = 0·8; negatives = 60 per cent.

Agglutinating Reaction of Serum on Bacillus Typhosus.

Date.	Serum dilutions. 10	20	40	80	160	320	Remarks.
Feb. 28th (before inoculation).	+	+	+	+	+	—	No reaction on paratyphoid A or B.
March 9th.	+	+	+	±	—		5 days after fourth inoculation.
April 11th.	+	+	+	±	—		5½ weeks after fourth inoculation.
,, 23th.	+	+	+	±	—		8 weeks after fourth inoculation.

Remarks.—Cultivations made from the fæces on Feb. 18th, May 1st, and from the urine on May 5th; negative. The disease in this case ran a very mild course; no complications.

CASE 4. *Treated with stock vaccine.*—Private ——, aged 22 years. Service five and a half years. Admitted to hospital March 3rd, 1907. Disease, enteric fever. March 5th: The serum gave no agglutinating reaction on bacillus typhosus or on paratyphoid A, but gave a complete reaction 1 in 10 and incomplete 1 in 20 on paratyphoid B. A cultivation made from the blood gave a pure growth of bacillus typhosus. 8th, 9th, 11th, and 12th: First, second, third, and fourth inoculations respectively, 8,000,000 bacilli. Thermostable opsonins not tested before inoculation. 13th (one day after fourth inoculation): 26 cells = 364 bacilli, average = 14; negatives = *nil*. Control 36 cells = 50 bacilli, average 1·4; negatives = 50 per cent. 17th (five days after fourth inoculation): 50 cells = 120 bacilli, average = 2·4; negatives = 24 per cent. Control not tested. 24th (13 days after fourth inoculation): 40 cells = 111 bacilli, average = 2·7; negatives = 25 per cent. Control 50 cells = 8 bacilli, average = 0·16; negatives = 88 per cent. April 11th: 100 cells = 700 bacilli, average = 7; negatives = 22 per cent. Control not tested. 29th: 50 cells = 250 bacilli, average = 5; negatives = 34 per cent. Control 50 cells = 40 bacilli, average = 0·8; negatives = 60 per cent.

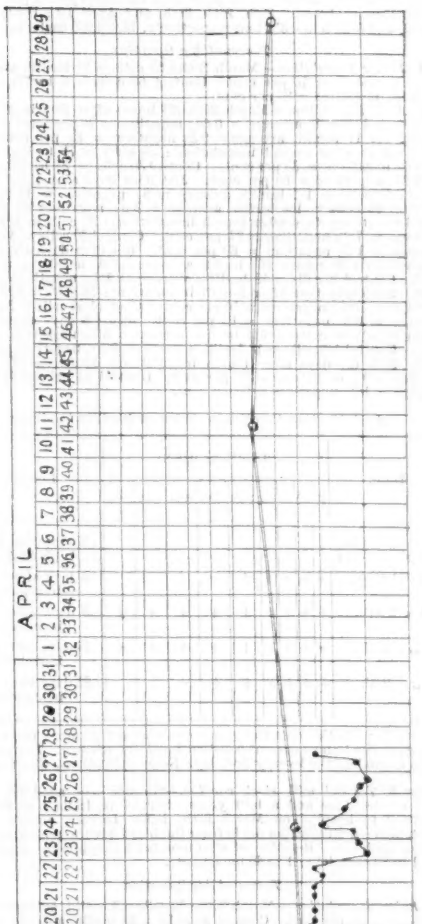
Agglutinating Reaction of Serum on Bacillus Typhosus.

Date.	Serum dilutions. 10	20	40	80	160	Remarks.
March 5th (before inoculation).	—	—				Reacted on paratyphoid B, 1 in 20. No reaction on A.
March 11th.	+	+	+	±	—	2 days after second inoculation.
,, 28th.	+	+	+	±	—	16 days after fourth inoculation.

Remarks.—Cultivations made from the fæces on March 7th, 18th, 20th, and 22nd, and May 1st gave negative results. A cultivation made from urine on May 1st gave negative results. The inoculations gave rise to no disturbance. The disease ran a mild course. There were no complications. (See Chart 1.)

CASE 5. *Treated with stock vaccine.*—Gunner ——, age 24½ years. Total service, four and a half years. In India two and a half years.

CHART 1. (Case 4.)



A, Bacillus typhosus isolated from the blood. B, First inoculation, 8,000,000 bacilli. C, Second, ditto. D, Third, ditto. E, Fourth, ditto. Double line = opsonic index.

Admitted to hospital March 23rd, 1907. Disease, enteric fever. March 24th: On admission his serum agglutinated bacillus typhosus complete 1 in 40, but not in higher dilutions. No reaction on paratyphoid A or B. A cultivation made from the blood gave a pure growth of bacillus typhosus. 25th, 26th, 29th, and April 1st: First, second, third, and fourth inoculations respectively, 12,000,000 bacteria.

Thermostable Opsonins.

1. *Before inoculation.*—March 25th: 55 cells = 28 bacilli, average = 0·51; negatives = 70 per cent. Control 50 cells = 8 bacilli, average = 0·16; negatives = 88 per cent.

2. *After inoculation.*—March 26th (24 hours after first inoculation): 63 cells = 42 bacilli, average = 0·66; negatives = 76 per cent. Control 50 cells = 11 bacilli, average = 0·2; negatives = 80 per cent. 29th (three days after second inoculation): 30 cells = 78 bacilli, average = 2·6; negatives = 33 per cent. Control 30 cells = 23 bacilli, average = 0·67; negatives = 60 per cent. 31st (two days after third inoculation): 30 cells = 181 bacilli, average = 6; negatives = 16 per cent. Control 30 cells = 104 bacilli, average = 3·5; negatives 20 per cent. April 4th (three days after fourth inoculation): 30 cells = 237 bacilli, average = 7·9; negatives = 27 per cent. Control 30 cells = 39 bacilli, average = 1·3; negatives = 60 per cent. 6th (five days after fourth inoculation): 30 cells = 267 bacilli, average = 8·9; negatives = 33 per cent. Control 30 cells = 42 bacilli; average = 1·4; negatives = 50 per cent. 9th (eight days after fourth inoculation): 30 cells = 320 bacilli, average = 10·7; negatives = 16 per cent. Control 50 cells = 32 bacilli, average = 0·6; negatives = 60 per cent. 16th (15 days after fourth inoculation): 50 cells = 434 bacilli, average = 8·7; negatives = 30 per cent. Control 110 cells = 18 bacilli, average = 0·16; negatives = 90 per cent. 29th (28 days after fourth inoculation): 33 cells = 277 bacilli, average = 9; negatives = 30 per cent. Control 33 cells = 41 bacilli, average = 1·2; negatives = 60 per cent.

Agglutinating Reaction of Serum on Bacillus Typhosus.

Date.	Dilutions used.									Remarks.
	10	20	40	80	160	320	500	640	800	
March 24th (on admission).	+	+	+	−						No reaction on paratyphoid A or B.
March 28th.	+	+	+	+	±	−				2 days after second inoculation.
April 4th.	+	+	+	+	+	+	+	+	±	3 days after fourth inoculation.
,, 15th.	+	+	+	+	+	+	+	+	−	14 days after fourth inoculation.
,, 29th.	+	+	+	+	±	−				28 days after fourth inoculation.

Remarks:—In this case the symptoms were not severe. The inoculations gave rise to no apparent constitutional disturbance. Temperature fell to normal on the twenty-first day. No complications. (See Chart 2.)

CASE 6. *Treated with stock vaccine.*—Gunner ——, aged 22½ years. Total service, four and a half years. Service in India four months. Admitted to hospital on March 27th, 1907. Disease, enteric fever. March 27th: A cultivation made from the blood gave a pure growth of bacillus typhosus. Reaction of serum on bacillus typhosus—agglutination 1 in 20 complete; 1 in 40 incomplete.

Thermostable Opsonins.

1. *Before inoculation.*—March 29th: 30 cells = 3 bacilli, average = 0·3; negatives = 93 per cent. Control 30 cells = 23 bacilli, average = 0·67; negatives = 60 per cent. 30th: 20 cells = 20 bacilli, average = 1; negatives = 50 per cent. Control 20 cells = 40 bacilli, average = 2; negatives = 20 per cent. 30th and 31st and April 1st and 2nd: First, second, third, and fourth inoculations of vaccine respectively, 6,000,000 bacilli.

2. *After inoculation.*—24 hours after third inoculation. April 2nd: 30 cells = 195 bacilli, average = 6·5; negatives = 3 per cent. Control 30 cells = 45 bacilli, average = 1·5; negatives = 50 per cent. 4th (two days after fourth inoculation): 30 cells = 162 bacilli, average = 5·4; negatives = 23 per cent. Control 30 cells = 39 bacilli, average = 1·3; negatives = 60 per cent. 6th (four days after fourth inoculation): 30 cells = 258 bacilli, average = 8·6; negatives = 16 per cent. Control 30 cells = 42 bacilli, average = 1·4; negatives = 50 per cent. 9th (seven days after fourth inoculation): 50 cells = 449 bacilli, average = 8·9; negatives = *nil*. Control 50 cells = 32 bacilli, average = 0·6; negatives = 60 per cent. 11th: Fifth inoculation of vaccine, 6,000,000 bacteria. 12th: Sixth, 6,000,000 bacilli. 15th (three days after sixth inoculation): 50 cells = 330 bacilli, average = 6·6; negatives = 6 per cent. Control 110 cells = 18 bacilli, average = 0·17; negatives = 90 per cent. 20th (eight days after sixth inoculation): 50 cells = 300 bacilli, average = 6; negatives = 52 per cent. Control 50 cells = 26 bacilli, average = 0·53; negative = 66 per cent. 22nd (ten days after sixth inoculation): 30 cells = 300 bacilli, average = 10; negatives = *nil*. Control 35 cells = 41 bacilli, average = 1·2; negatives = 50 per cent. 30th (18 days after sixth inoculation): 30 cells = 64 bacilli, average = 2·1; negatives = 50 per cent. Control 30 cells = 17 bacilli, average = 0·56; negatives = 66 per cent.

Remarks.—The inoculations had no appreciable effect in diminishing the length of the fever period. Some improvement in the clinical symptoms was produced by the vaccine. About the twenty-fourth day of the disease the patient developed symptoms of bronchitis accompanied by a severe cough. At no time during the disease were the symptoms severe, and the patient made a good recovery.

CASE 7.—*Treated with stock vaccine.*—Driver ——, aged 23 years. Service four years and three months. In India 11 months. Admitted to hospital April 28th, 1908. Disease, enteric fever. April 29th: A cultivation made from the blood gave a pure growth of bacillus typhosus. May 2nd, 3rd, 4th, and 5th: First, second, third and fourth inoculations respectively of 30,000,000 bacilli.

Thermostable Opsonins.

1. *Before inoculation.*—May 1st: 50 cells = 298 bacilli, average = 5·96; negatives = 34 per cent. Control 50 cells = 17 bacilli, average = 0·34; negatives = 82 per cent. 2nd: 50 cells = 469 bacilli, average = 9·38; negatives = 12 per cent. Control 50 cells = 17 bacilli, average = 0·34; negatives = 76 per cent.

2. *After inoculation.*—May 3rd (24 hours after first inoculation): 50 cells = 1227 bacilli, average = 24·5; negatives = *nil*. Control 50 cells = 22 bacilli, average = 0·44; negatives = 84 per cent. 4th (24 hours after second inoculation): 50 cells = 590 bacilli, average = 11·8; negatives = *nil*. Control 50 cells = 15 bacilli, average = 0·3; negatives = 84 per cent. 5th (24 hours after third inoculation): 50 cells = 560 bacilli, average = 11·2; negatives = 2 per cent. Control 50 cells = 20 bacilli, average = 0·4; negatives = 78 per cent. 6th (24 hours after fourth inoculation): 50 cells = 694 bacilli, average = 13·88; negatives = 4 per cent. Control 50 cells = 18 bacilli, average = 0·36; negatives = 80 per cent 7th (48 hours after fourth inoculation): 50 cells = 855 bacilli, average = 17·1; negatives = 2 per cent. Control 50 cells = 20 bacilli, average = 0·4; negatives = 80 per cent. 8th (three days after fourth inoculation): 50 cells = 931 bacilli, average = 18·6; negatives = 4 per cent. Control 50 cells = 21 bacilli, average = 0·41; negatives = 74 per cent. 9th (four days after fourth inoculation): 50 cells = 432 bacilli, average = 8·64; negatives = 16 per cent. Control 50 cells = 22 bacilli, average = 0·44; negatives = 72 per cent. 10th (five days after fourth inoculation): 50 cells = 769 bacilli, average = 15·38; negatives = 8 per cent. Control 50 cells = 10 bacilli, average = 0·2; negatives = 82 per cent. 11th (six days after fourth inoculation): 50 cells = 492 bacilli, average = 9·84; negatives = 6 per cent. Control 50 cells = 15 bacilli, average = 0·36; negatives = 82 per cent. 12th (seven days after inoculation): 50 cells = 367 bacilli, average = 7·34; negatives = 10 per cent. Control 50 cells = 20 bacilli, average = 0·4; negatives = 72 per cent. 15th (ten days after fourth inoculation): 50 cells = 793 bacilli, average = 15·86; negatives = *nil*. Control

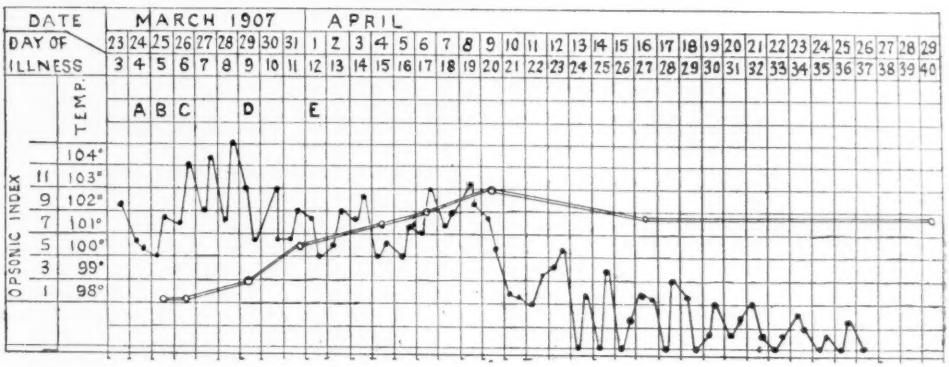
Agglutinating Reaction of Serum on Bacillus Typhosus.

—	Serum dilutions.						Remarks.
	10	20	40	80	160	320	
March 27th (before inoculation).	+	+	±	−			Also reacted on paratyphoid A 1 in 20, but not on B.
April 3rd.	+	+	+	±	−		24 days after first inoculation.
,, 4th.	+	+	+	±	−		2 days after fourth inoculation.
,, 10th.	+	+	+	±	−		8 days after fourth inoculation.
,, 15th.	+	+	+	+	±	−	13 days after fourth inoculation.
,, 30th.	+	+	+	+	+	±	18 days after sixth inoculation.
May 4th.	+	+	+	+	±	−	22 days after sixth inoculation.

Agglutinating Reaction of Serum on Bacillus Typhosus.

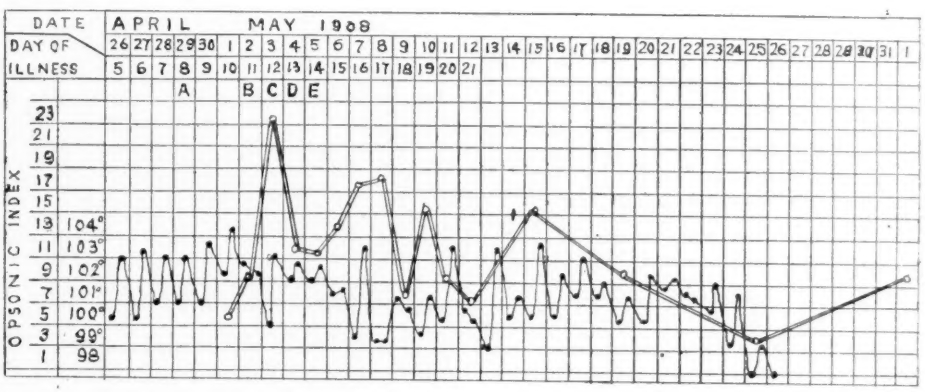
—	Serum dilutions.							Remarks.
	10	20	40	80	160	320	640	
April 29th.	+	+	+	+	+	±		Before inoculation.
May 1st.	+	+	+	+	+	±		,, ,,
,, 2nd.	+	+	+	+	+	+	+	,, ,,
,, 3rd.	+	+	+	+	±	−		24 hours after first inoculation.
,, 4th.	+	+	+	+	+	±		24 hours after second inoculation.
,, 5th.	+	+	+	+	+	+	±	24 hours after third inoculation.
,, 6th.	+	+	+	+	+	+	±	24 hours after fourth inoculation.
,, 8th.	+	+	+	+	+	+	±	3 days after fourth inoculation.
,, 9th.	+	+	+	+	+	+	±	4 days after fourth inoculation.
,, 10th.	+	+	+	+	+	+	±	5 days after fourth inoculation.
,, 11th.	+	+	+	+	+	±		6 days after fourth inoculation.
,, 12th.	+	+	+	+	+	±		7 days after fourth inoculation.
,, 15th.	+	+	+	+	+	+	+	10 days after fourth inoculation.
,, 19th.	+	+	+	+	+	+	+	1280 + 2 weeks after fourth inoculation.
,, 25th.	+	+	+	+	+	±		3 weeks after fourth inoculation.
June 1st.	+	+	+	+	+	+	±	

CHART 2. (Case 5.)



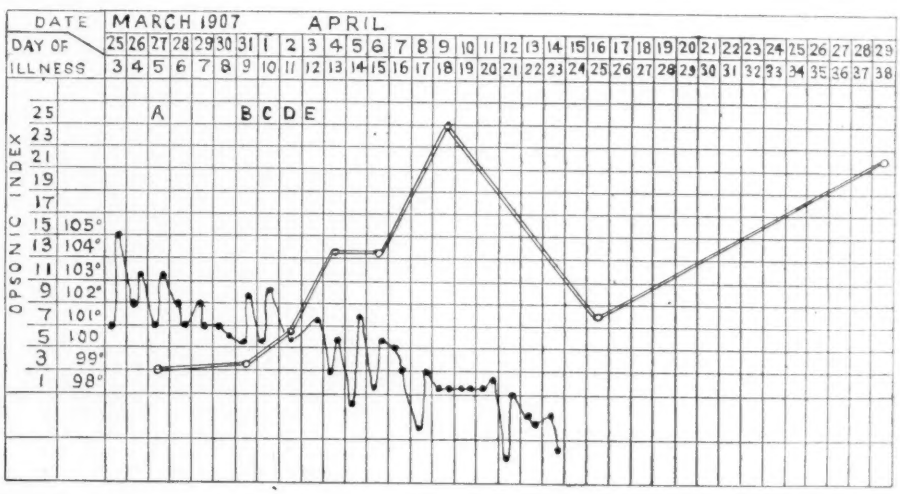
A, Bacillus typhosus isolated from the blood. B, First inoculation, 12,000,000 bacilli. C, Second, ditto. D, Third, ditto. F, Fourth, ditto.

CHART 3. (Case 7.)



A, Bacillus typhosus isolated from the blood. B, First inoculation, 30,000,000 bacilli. C, Second, ditto. D, Third, ditto F, Fourth ditto.

CHART 4. (Case 8.)



A, Bacillus typhosus isolated from the blood. B, First inoculation, 10,000,000 bacilli. C, Second, ditto. D, Third, ditto. F, Fourth, ditto.

50 cells = 21 bacilli, average = 0·42; negatives = 74 per cent. 19th (14 days after fourth inoculation): 50 cells = 412 bacilli, average = 8·24; negatives = 6 per cent. Control 50 cells = 17 bacilli, average = 0·34; negatives = 84 per cent. 25th (20 days after fourth inoculation): 50 cells = 234 bacilli, average = 4·68; negatives = 16 per cent. Control 50 cells = 19 bacilli, average = 0·38; negatives = 78 per cent. June 1st (26 days after fourth inoculation): 50 cells = 472 bacilli, average = 9·44; negatives = 12 per cent. Control 50 cells = 18 bacilli, average = 0·36; negatives = 74 per cent.

Remarks.—No very marked improvement was noticed after the inoculations in this case. The opsonic index was high to begin with, and went up higher still after inoculation, and remained high during the whole course of the disease. A severe type of enteric fever from the outset. The first inoculation was given on the eleventh day of the disease. (See Chart 3.)

CASE 8.—*Treated with a vaccine prepared from his own micro-organism.*—Gunner ——, aged 28 years. Total service seven years. Service in India three and a half years. Admitted to hospital March 27th, 1907. Disease, enteric fever. On admission on March 27th his serum agglutinated bacillus typhosus complete 1 in 40 and incomplete 1 in 80. It also agglutinated paratyphoid A complete 1 in 40, but gave no reaction with paratyphoid B. A cultivation made from the blood gave a pure growth of bacillus typhosus. On March 29th and 30th a vaccine was prepared from his own infecting micro-organism and sterilised and standardised in the usual way. March 31st: First inoculation of vaccine 10,000,000 bacilli. April 1st, 2nd, and 3rd: Second, third, and fourth inoculations respectively of 10,000,000 bacilli.

Thermostable Opsonins.

1. *Before inoculation.*—March 29th: 30 cells = 66 bacilli, average = 2·2; negatives = 43 per cent. Control 30 cells = 131 bacilli, average = 4·3; negatives = 6·6 per cent. 31st: 30 cells = 86 bacilli, average = 2·8; negatives = 30 per cent. Control 30 cells = 104 bacilli, average = 3·5; negatives = 20 per cent.

2. *After inoculation.*—April 2nd (24 hours after second inoculation): 30 cells = 195 bacilli, average = 6·5; negatives = 3·3 per cent. Control 30 cells = 45 bacilli, average = 1·5; negatives = 50 per cent. 4th (24 hours after fourth inoculation): 30 cells = 406 bacilli, average = 13·5; negatives = *nil*. Control 30 cells = 39 bacilli, average = 1·3; negatives = 60 per cent. 6th (three days after fourth inoculation): 30 cells = 399 bacilli, average = 13·3; negatives = *nil*. Control 30 cells = 42 bacilli, average = 1·4; negatives = 50 per cent. 9th (six days after fourth inoculation): Cells were all crowded with bacilli; negatives = *nil*. Control 50 cells = 32 bacilli, average = 0·6; negatives = 60 per cent. 16th (13 days after fourth inoculation): 40 cells = 321 bacilli, average = 8; negatives = 5 per cent. Control 60 cells = 13 bacilli, average = 0·25; negatives = 90 per cent. 29th: 30 cells = 693 bacilli, average = 21; negatives = 20 per cent. Control 33 cells = 41 bacilli, average = 1·2; negatives = 60 per cent.

Agglutinating Reaction of Serum on Bacillus Typhosus.

—	Serum dilutions.							Remarks.
	10	20	40	80	160	320	640	
March 27th (on admission).	+	+	+	±				Also reacted on paratyphoid A up to 1 in 40, but not on B.
April 4th.	+	+	+	+	+	±		1 day after fourth inoculation.
,, 10th.	+	+	+	+	+	±		7 days after fourth inoculation.
,, 15th.	+	+	+	+	+	+	±	12 days after fourth inoculation.
,, 29th.	+	+	+	+	+	±		

Remarks.—This patient improved steadily after the first inoculation. His opsonic index remained high throughout the disease. There were no complications. (See Chart 4.)

CASE 9.—*Treated with a vaccine prepared from his own micro-organism.*—Gunner ——, aged 26 years. Service one year and three months. Admitted to hospital April 17th, 1908. Disease, enteric fever. April 17th: A cultivation made from the blood gave a pure growth of bacillus typhosus. On April 21st and 22nd a vaccine was prepared and standardised, and sterilised in the usual way. April 23rd, 24th, and 25th: First, second, and third inoculations respectively of 40,000,000 bacilli.

Thermostable Opsonins.

1. *Before inoculation.*—April 20th: 50 cells = 6 bacilli, average = 0·12; negatives = 88 per cent. Control 50 cells = 8 bacilli, average = 0·16; negatives = 84 per cent. 21st: 30 cells = 40 bacilli, average = 1·3; negatives = 53 per cent. Control 40 cells = 44 bacilli, average = 1·1; negatives = 60 per cent. 22nd: 50 cells = 30 bacilli, average = 0·6; negatives = 74 per cent. Control 50 cells = 35 bacilli, average = 0·7; negatives = 56 per cent.

2. *After inoculation.*—April 24th (24 hours after first inoculation): 50 cells = 208 bacilli, average = 4·1; negatives = 28 per cent. Control 50 cells = 25 bacilli, average = 0·5; negatives = 80 per cent. 25th: (24 hours after second inoculation): 50 cells = 124 bacilli, average = 2·4; negatives = 12 per cent. Control 50 cells = 15 bacilli, average = 0·3; negatives = 67 per cent. 26th (24 hours after third inoculation): 50 cells = 115 bacilli, average = 2·3; negatives = 16 per cent. Control 50 cells = 30 bacilli, average = 0·6; negatives = 76 per cent. 27th (48 hours after third inoculation): 50 cells = 381 bacilli, average = 7·5; negatives = 8 per cent. Control 50 cells = 15 bacilli, average = 0·3; negatives = 82 per cent. 28th (three days after third inoculation): 50 cells = 519 bacilli, average = 10·3; negatives = 2 per cent. Control 50 cells = 14 bacilli, average = 0·24; negatives = 72 per cent. 29th (four days after third inoculation): 50 cells = 245 bacilli, average = 4·9; negatives = 18 per cent. Control 50 cells = 31 bacilli, average = 0·62; negatives = 72 per cent. 30th (five days after third inoculation): 50 cells = 92 bacilli, average = 1·84; negatives = 54 per cent. Control 50 cells = 15 bacilli, average = 0·3; negatives = 84 per cent. May 1st (six days after third inoculation): 50 cells = 62 bacilli, average = 1·2; negatives = 60 per cent. Control 50 cells = 17 bacilli, average = 0·34; negatives = 82 per cent. 4th (nine days after third inoculation): 50 cells = 62 bacilli, average = 1·24; negatives = 52 per cent. Control 50 cells = 15 bacilli, average = 0·3; negatives = 80 per cent. 13th (18 days after third inoculation): 50 cells = 100 bacilli, average = 2; negatives = 22 per cent. Control 50 cells = 19 bacilli, average = 0·38; negatives = 78 per cent. 26th (31 days after third inoculation): 50 cells = 91 bacilli, average = 1·82; negatives = 24 per cent. Control 50 cells = 19 bacilli, average = 0·38; negatives = 78 per cent. June 1st: 50 cells = 67 bacilli, average = 1·34; negatives = 38 per cent. Control 50 cells = 18 bacilli, average = 0·36; negatives = 74 per cent.

Agglutinating Reaction of the Serum on Bacillus Typhosus.

—	Serum dilutions.							Remarks.
	10	20	40	80	160	320	640	
April 20th.	+	+	+	+	+	±		Before inoculation.
,, 24th.	+	+	+	+	+	±		24 hours after first inoculation.
,, 25th.	+	+	+	+	+	±		24 hours after second inoculation.
,, 26th.	+	+	+	+	+	±		24 hours after third inoculation.
,, 27th.	+	+	+	+	+	±		48 hours after third inoculation.
,, 28th.	+	+	+	+	+	±		3 days after third inoculation.
,, 29th.	+	+	+	+	+	±		4 days after third inoculation.
,, 30th.	+	+	+	+	+	±		5 days after third inoculation.
May 1st.	+	+	+	+	+	±		6 days after third inoculation.
,, 4th.	+	+	+	+	+	±		9 days after third inoculation (temperature normal).
,, 13th.	+	+	+	+	+	±		18 days after third inoculation.
,, 26th.	+	+	+	+	+	+	±	31 days after third inoculation.
June 1st.	+	+	+	+	+	±		37 days after third inoculation.

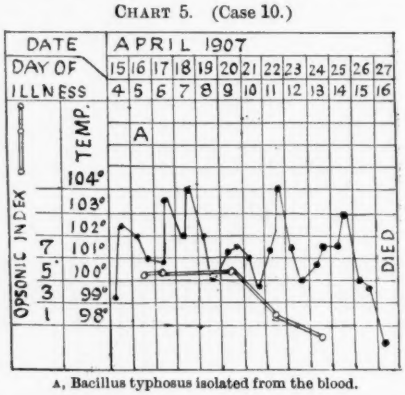
Remarks.—Steady improvement set in after the first inoculation. Temperature normal on the nineteenth day. No complications.

CASE 10. *Not treated with vaccine.*—Gunner ——, aged 22 years and 8 months. Total service 7 years and 10 months. Service in India 7 months. Admitted to hospital April 16th, 1907. Disease, enteric fever. April 16th: On admission his serum agglutinated bacillus typhosus 1 in 80. Higher dilutions not tried. No reaction on paratyphoid A or B. A cultivation made from his blood on the same date gave a pure growth of bacillus typhosus.

Thermostable Opsonins.

April 16th: 50 cells = 252 bacilli, average = 5; negatives = 40 per cent. Control not tested. 17th: 30 cells = 160 bacilli, average = 5·3; negatives = 40 per cent. Control 40 cells = 20 bacilli, average = 0·5; negatives = 60 per cent. 20th: 50 cells = 319 bacilli, average = 6; negatives = 10 per cent. Control 30 cells = 17 bacilli, average = 0·56; negatives = 50 per cent. 22nd: 50 cells = 100 bacilli, average = 2; negatives = 52 per cent. Control 35 cells = 41 bacilli, average = 1·4; negatives = 50 per cent. 24th: 32 single cells counted. All negative. A possible error due to clumps of cells and bacteria. Died April 27th.

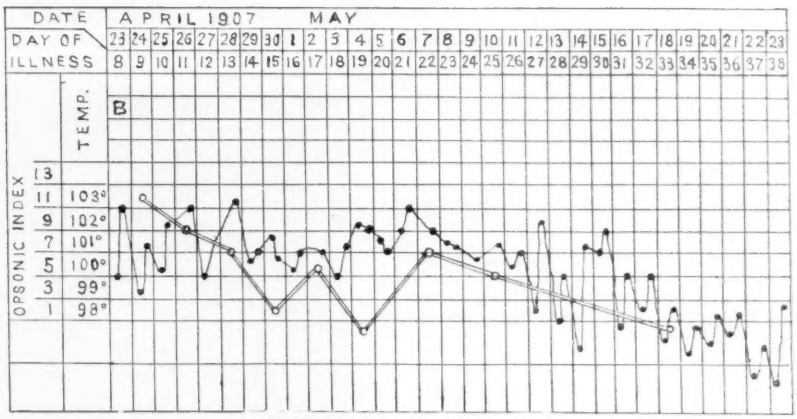
CHART 5. (Case 10.)



A, Bacillus typhosus isolated from the blood.

Remarks.—The disease assumed a severe type after April 22nd, when a low typhoid condition accompanied by hæmorrhage from the bowels set in. (See Chart 5.)

CHART 6. (Case 11.)



B, Bacillus typhosus isolated from the blood.

CASE 11. *Not treated with vaccine.*—Gunner ——, aged 23 years. Service 4½ years. Admitted to hospital April 23rd, 1907 (eighth day of disease). Disease, enteric fever. April 23rd: Agglutinating reaction of serum on bacillus typhosus on admission 1 in 80 complete; 1 in 160 incomplete. Also gave a complete agglutination with paratyphoid A and B, 1 in 40 (group reactions). A cultivation made from the blood gave a pure growth of bacillus typhosus.

Thermostable Opsonins.

April 24th: 30 cells = 361 bacilli, average = 12; negatives = *nil*. Control 30 cells = 0. (The control on this date was a man being inoculated with staphylococcus vaccine as a curative for boils.) 26th: 20 cells = 180 bacilli, average = 9; negatives = *nil*. Control not tested. 28th: 50 cells = 351 bacilli, average = 7; negatives = 2 per cent. Control 50 cells = 40 bacilli, average = 0·8; negatives = 60 per cent. 30th: 30 cells = 60 bacilli, average = 2; negatives 40 per cent. Control 30 cells = 17 bacilli, average = 0·56; negatives = 66 per cent. May 2nd: 33 cells = 177 bacilli, average = 5·4; negatives = 15 per cent. Control 33 cells = 17 bacilli, average 0·51; negatives = 75 per cent. 4th: 50 cells = 40 bacilli, average = 0·8; negatives = 66 per cent. Control not tested. 7th: 40 cells = 300 bacilli, average = 7·5; negatives = 6 per cent. Control not tested. 10th: 50 cells = 250 bacilli, average = 5, negatives = 4 per cent. Control 55 cells = 45 bacilli, average = 0·9; negatives = 80 per cent. 18th: 50 cells = 32 bacilli, average = 0·64; negatives not counted. Control cells = 12 bacilli, average = 0·4; negatives not tested.

Agglutinating Reaction of Serum on Bacillus Typhosus.

—	Serum dilutions.										Paratyphoid A.			Paratyphoid B.		
	10	20	40	80	160	200	300	400	640	800	40	80	160	40	80	160
April 23rd.	+	+	+	+	±	–					+	–		+	–	
,, 26th.	+	+	+	+	+	+	±				+	+	–	+	+	–
,, 28th.	+	+	+	+	+	+	+	+	±							
,, 29th.	+	+	+	+	+	+	+	+	+	±						
,, 30th.	+	+	+	+	+	+	+	+	+	±						
May 4th.	+	+	+	+	+	+	+	+	–							
,, 5th.	+	+	+	+	+	+		±								

Remarks.—The disease was not of a severe type, although the fever period was somewhat prolonged. Patient commenced to convalesce on the thirty-third day. His opsonic index remained fairly high throughout except on April 30th and May 4th, which corresponded to the worst periods of his illness. (See Chart 6.)

APPENDIX II.

The charts here reproduced show the temperature and opsonic indices of six of the 11 cases of typhoid referred to in the foregoing note. These charts also show the date and day of disease on which the bacillus typhosus was isolated from the blood; the dosage, and interspacing of doses of vaccine in the cases treated. In the opsonic charts the control or normal person is taken as unity, although in several instances the controls were below this average standard and in others above it. The opsonic charts are intended merely to give a general impression as to the increase or decrease of opsonins during the progress of the disease. A more correct idea of the opsonic changes which took place will be found in the details of each case in Appendix I.

A CASE OF FACIAL PALSY TREATED BY FACIO-HYPOGLOSSAL ANASTOMOSIS

IN WHICH AN ANASTOMOSIS WAS ALSO MADE BETWEEN THE SPINAL ACCESSORY AND THE DISTAL SEGMENT OF THE DIVIDED HYPOGLOSSAL NERVE IN ORDER TO PREVENT PERMANENT LINGUAL PARALYSIS AND ATROPHY.[1]

BY CHARLES A. BALLANCE, M.V.O., M.S. LOND.,
SURGEON TO ST. THOMAS'S HOSPITAL.

THE patient was a single woman, aged 25 years, under the care of Dr. David Ferrier at the National Hospital for the Paralysed and Epileptic, Queen-square. When first seen by me, in January, 1906, she had complete left facial palsy and unhealed disease of the temporal bone. She gave a decided family history of phthisis and had herself suffered from hæmoptysis. In 1903, three years before she came under my care, she met with two severe accidents in each of which she was struck on the head, and in the second of which (a motor accident) she also sustained a severe mental shock, her companion being killed. Some six weeks after the last accident a discharge of thin watery inodorous pus was noticed from the left ear, and she suffered from tinnitus. She went to a hospital, and in March, 1904 (five months after the accident), was operated upon for the first time. The discharge continued, and so in July, 1904, a second operation was done, and in November a third, but with no better result. After the third operation the patient noticed a tendency to deviate to the right in walking, and the left side of the face became completely paralysed. The discharge continued, and in February, 1905, a fourth operation was done. A week later another operation was performed, after which the patient had severe attacks of giddiness and frequently fell, sometimes backwards, sometimes to the right. She had constant headache with pain in the ear, but no sickness. In July, 1905, a sixth attempt to cure the bone disease by operation was made. Some improvement in general condition followed, but the discharge continued. In November, 1905, the pain in the head became worse and was associated with giddiness and vomiting. When the discharge was free

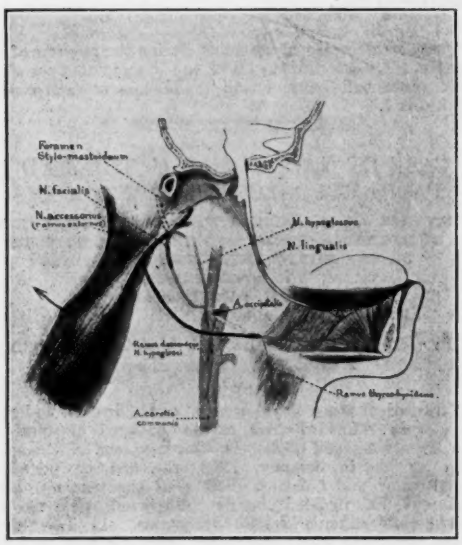
[1] A short account of this case was given at a meeting of the German Society of Surgery in Berlin on April 16th. At the same meeting Dr. Tilmann of Cologne demonstrated a very successful case of facio-hypoglossal anastomosis four years after operation.

the pain was better and *vice versâ*. She frequently fell without any warning and bruised herself. Her vision became misty and she experienced difficulty in reading.

When I saw the patient in January, 1906, foul pus was discharging from the left ear; the meatal flap had apparently fallen down so that the antrum could not be seen through the speculum. Pus was obviously pent up behind the flap. There was complete facial palsy on the left side; the patient suffered from pain in the left ear and from frontal and occipital headache. She was slightly ataxic on the left side. In walking she occasionally tended to deviate but the direction of deviation was not constant. There was no aerial conduction of hearing on the left side but bone conduction was still present. There was no optic neuritis, but the left external rectus was weak. The reflexes were normal. The right ear was normal.

On Jan. 24th, 1906, a radical mastoid operation was performed. I found that the facial nerve had been divided in the descending portion of the Fallopian canal, the horizontal semicircular canal had been opened, and there were two other openings into the semicircular canals as if an attempt had been made to remove them. The antrum had been

FIG. 1.



Facio-hypoglossal anastomosis. Accessory-hypoglossal anastomosis. The hypoglossal nerve was divided at the posterior border of the hyoglossus muscle. The occipital artery was then divided and the proximal end of the hypoglossal was sutured end to end to the trunk of the facial nerve which had been divided at the stylo-mastoid foramen. The spinal accessory nerve was split longitudinally and one-half was brought across the neck and sutured end to end to the distal cut end of the hypoglossal at the posterior border of the hyoglossus muscle.

incompletely exposed and was full of greenish pus. The tegmen tympani was carious and was removed; the dura over it was thickened but not perforated. In the 24 hours after the operation the patient three times passed into a curious subconscious state of low delirium, the respiration ceased, and artificial respiration and stimulants were necessary. The sight was much impaired, and the pupils were widely dilated and nearly immobile both to light and to accommodation. The sensitiveness of the left cornea was diminished. There was no diplopia. After the grafting operation was done epidermisation was soon completed.

On July 4th, 1906, the patient was re-admitted to hospital. There was slight constant left internal strabismus in addition to complete left facial palsy of peripheral type. On the 10th a nerve-grafting operation was done. An incision was made along the anterior border of the sterno-mastoid; the posterior belly of the digastric was exposed and divided; the facial nerve was found at the lower part of the parotid and was identified by direct electrical stimulation; the retrahens aurem was the only muscle which responded to the stimulus. The trunk of the facial was followed up to the stylo-mastoid foramen and divided

FIG. 2.

Facio-hypoglossal anastomosis. To show symmetry of face. The paralysis of the left external rectus occurred before the patient came under observation.

FIG. 3.

Facio-hypoglossal anastomosis. To show closure of eye.

at its point of emergence. The hypoglossal nerve was found and divided at the posterior border of the hyoglossus. The occipital artery was divided between two

ligatures so as to set free the nerve. The central end of the hypoglossal nerve was then anastomosed with the peripheral end of the facial. The spinal accessory nerve was next isolated and split longitudinally for about two inches; one-half of the nerve was divided transversely at the distal peripheral end of the slit. The strip of spinal accessory so raised up was united end to end with the peripheral end of the divided hypoglossal. The posterior belly of the digastric was sutured and the wound closed. Six weeks after the operation the left trapezius and sterno-mastoid muscles and the left side of the tongue were atrophied (Fig. 1).

The patient went to Canada and so was lost sight of for some time. When she returned 20 months after the operation the nutritional and functional recovery of the facial,

FIG. 4.

Recovery of tongue (after atrophy from division of the hypoglossal nerve) following union with the spinal accessory nerve.

lingual, and cervical muscles was complete. The movements of the face and tongue were dissociated, but when the shoulder was suddenly jerked a wave of muscular contraction was seen to pass from the back of the left side of the tongue towards the tip, so that the movements of the shoulder and tongue are not yet completely dissociated (Figs. 2, 3, 4, and 5).

Although I happen to be the first surgeon (*British Medical Journal*, 1903) to perform a facio-accessory anastomosis (in 1895), Dr. Körte (*Deutsche Medicinische Wochenschrift*, 1903) was the first to perform a facio-hypoglossal anastomosis (in 1901), my first facio-hypoglossal anastomosis being performed in 1902. The hypoglossal nerve supplies muscles the cortical centres of which are nearer to the face centres than is the case with the cortical centres of the muscles of the shoulder. The cortical centres for the muscles of the face and tongue indeed overlap one another. It might therefore be anticipated that the prospects of dissociated facial movement through the centre for the movements of the tongue would be greater than when working through the centre for the movements of the shoulder. Moreover, it may be recalled that the movements of the tongue are closely associated with those of the lips, so much so that in health the orbicularis oris and the transverse fibres of the tongue contract together. Probably the facial nerve derives its lip fibres from the hypoglossal nucleus. There is certainly a close relation not only between the cortical face centre and tongue centre, but also between the facial and hypoglossal nuclei in the bulb. The hypoglossal nerve is therefore to be preferred for this anastomosis to the spinal accessory nerve.

Experience has shown that the atrophy of one half of the tongue leads to no material inconvenience, but that loss of power in the sterno-mastoid and trapezius muscles may be associated with deformity, discomfort, inconvenience, and even worse results. These are additional reasons why the hypoglossal should be preferred for the anastomosis, a view which Professor Trendelenburg endorses.

It is of the first importance to obtain in cases of facial palsy as the result of nerve anastomosis movements of the face dissociated from those of the shoulder or the tongue, as the case may be. In this way only can equal and symmetrical emotional movements, as in talking and laughing, be restored. It was shown by Professor Bernhardt[2] that in most of the cases of facial palsy which had been treated by grafting the facial nerve on the spinal accessory or the hypoglossal, although the patient did regain normal electrical reactions, associated movement of the facial muscles with those of the shoulder or tongue, and some power of voluntary movement of the facial muscles, yet the normal symmetrical play of the facial muscles in the expression of the emotions was not regained, so that the deformity, though no longer noticeable when the face was at rest, became apparent directly the patient expressed any emotional state, as in laughing or talking.

In the case I have related the movements due to emotional stimuli are symmetrical and perfect. I believe this result can be obtained only by devoting the whole nerve, either spinal accessory or hypoglossal, to the cure of the facial palsy. Partial anastomosis such as I and others have on many occasions done is not the right course to adopt. End-to-side anastomosis I condemn, as I do also end-to-end

FIG. 5.

Atrophy of tongue following division of the hypoglossal nerve. (After Purves Stewart.)

anastomosis with use of part only of the hypoglossal or of the spinal accessory nerve. The attempt to obtain recovery from the lingual atrophy by uniting the distal end of the divided hypoglossal to the lingual nerve on the hyoglossus muscle has in my hands failed. This case shows how a good result may be obtained without sacrificing half of the tongue or either of the cervical muscles.

I am much indebted to Dr. S. A. Kinnier Wilson for the photographs of the case.

Harley-street, W.

[2] Quoted from Professor Trendelenburg's article on Facial Palsy (Deutsche Chirurgie, 1908), and from Professor Alt's article on the Operative Treatment of Facial Palsy (Verhandlungen der Deutschen Otologischen Gesellschaft, 1908).

THE SURGICAL TREATMENT OF COLITIS.[1]

BY GEORGE HEATON, M.B., B.CH. OXON., F.R.C.S. ENG.,
SURGEON TO THE GENERAL HOSPITAL, BIRMINGHAM.

DURING the past few years certain inflammatory affections of the large intestine, which until recently had always been treated by purely medical measures, have been occasionally dealt with by surgical means, and attention has been called by surgeons to the good results which may be attained in such cases by diverting the intestinal contents from the inflamed bowel. As I have recently had under my care two cases where this has been done with happy results I have thought it might be of interest to relate them and to make some brief remarks on the present position of surgery in this connexion.

For clinical purposes the various inflammatory affections of the large intestine—excluding specific infections like dysentery and the various forms of colitis met with secondarily in such general diseases as Bright's disease, pneumonia, and pyæmia—may be divided into four main classes: (1) acute and chronic simple colitis; (2) muco-membranous colitis; (3) acute ulcerative colitis; and (4) chronic ulcerative colitis.

Of simple acute colitis I do not propose to speak. Its treatment is a purely medical one and properly comes within the domain of the physician.

Simple Chronic Colitis.

Simple chronic colitis is a disease to which a good deal of attention has been directed of late years. In its pathology it would seem to resemble the chronic hypertrophic inflammation that one sees in the nose, and it has been called "colitis hypertrophica." It is a disease of adult life and considerably commoner in women than in men. It probably owes its origin, as so many other bowel disorders do, to habitual chronic constipation. The membranous colitis, to be referred to afterwards, seems in the majority of cases to pass through this stage.

When suffering from this form of colitis the patient, who has habitually to take purgatives to get any action of the bowels, has a good deal of griping abdominal pain, and there is usually tenderness along the course of the colon. The large bowel can frequently be palpated as a thickened tender tumour in each loin. The sigmoidoscope, which should invariably be used in these cases, reveals nothing abnormal except an excessive amount of mucus coming down from the sigmoid, and this passage of mucus is a main symptom in the disease.

It is of interest from the surgical point of view in two ways. First of all, such patients are liable to mild catarrhal attacks of appendicitis by direct extension of the trouble to the appendix. In these attacks they refer all their pain and trouble to the right iliac fossa and a tender swelling may be felt there. But a similar tenderness is generally present along the whole course of the colon. In many cases there is doubtless a distension of the cavity of the appendix with mucus, and when this escapes the pain over the organ ceases. But these intermittent distensions of the appendix may be repeated indefinitely, and when so repeated undoubtedly call for surgical treatment. For at any time the distended and thinned appendix may actually burst. But when such an operation is being advised it should be made clear to the patient that the operation is being undertaken to remove the risk of a burst of the appendix and that the symptoms which are due to the colitis may still remain.

In the second place I am firmly convinced that in some cases of chronic colitis, when the symptoms have remained unabated in spite of years of patient medical treatment, a removal of the appendix will sometimes completely cure the patient, and this even when after removal there is apparently little or nothing pathological in the removed organ. I have on eight or nine occasions removed the appendix in such cases at the request of my medical colleague, Dr. T. Stacey Wilson, and in the large majority of the cases the operation has resulted in the cure of the colitis. I can only suggest as an explanation of these results that the appendix may in some cases of chronic colitis act as a storage-ground for intestinal toxins, or its contents as the culture medium of the organisms which keep up the chronic inflammatory process.

[1] A paper read before the Midland Medical Society on March 24th, 1909.

Muco-membranous Colitis.

Membranous or muco-membranous colitis is an affection about which much has been written and about the pathology of which we are still very much in the dark. Various theories are held on the subject. Nothnagel, on the one hand, regards it as due to a "perverted innervation" of the intestine and is supported in this view by the fact that it may exist without any structural alteration or evidence of inflammation being observed in the colon. Von Noorden holds that constipation is invariably the exciting cause; while Glénard and others hold that a general enteroptosis is always present and is the main factor in its causation. We know at any rate that in a certain number of cases it is associated with diseases of the female pelvic organs and that certain other organic diseases of the bowel, such as appendicitis and carcinoma, are not infrequently found in conjunction with it. It is in all probability primarily a local disorder of the large bowel in the causation of which constipation takes a large part.

Its clinical characters are fairly typical. The majority of the patients are women somewhere between the ages of 20 and 40 years. They are usually thin, anæmic, with disordered digestions and poor circulation. Neurasthenia or hypochondriasis is often present, and the complaint is commonest amongst the so-called leisured classes. There is almost invariably a history of long-continued habitual constipation. The pain is usually of a griping character and in the course of the colon. The characteristic membranous casts are from time to time passed per anum and with these casts bright red blood is frequently seen. The sigmoidoscope reveals no ulceration of the bowel and the mucous membrane in a large number of cases is apparently normal.

Such patients have as a rule weak, flaccid abdominal walls, which give a poor support to the abdominal viscera; and in consequence these viscera, and particularly the kidneys, become loose, and there is a general visceroptosis. This visceroptosis is so common as strongly to suggest a relation between the conditions. I have on one occasion performed a nephropexy on a lady with the object of ameliorating or curing the disease. The operation was successful for three or four months, but then the membranes were passed as frequently as before.

The disease is, unfortunately, a most rebellious one to treatment. Though rarely, if ever, fatal, the patients are apt to drift into a hopeless invalidism. General hygienic measures, a careful dieting, plenty of outdoor exercise, and a change of air and scene are the chief agents in improving their condition. Medicinally the main thing is to overcome the constipation, and it would seem that the best results are gained by administering castor oil in frequent and small doses. The various intestinal antiseptics—bismuth, salol, β naphthol, cyllin, and the like—are extolled by some, but they fail as often as they succeed. If aperients fail the large intestine should be washed out daily with copious enemata and this requires to be done for several months.

Of late years surgical measures have been tried and in some cases with marked success. Weir of New York was the first surgeon to do a cæcostomy, though in his case the patient had an ulcerative colitis. Since then cæcostomy, and more recently appendicostomy, has been performed a number of times by various surgeons, and a considerable number of cures have been reported. By means of these operations the large intestine is put at rest, and with a cæcostomy the fæces are entirely diverted from the disordered bowel. At the same time, through the opening thus made the colon can be daily irrigated with mild antiseptics or astringents.

For membranous colitis appendicostomy would seem the better operation, and I have lately had a most successful case, the notes of which I briefly give.

CASE 1. *Appendicostomy for membranous colitis.*—The patient was a woman, aged 35 years. She had been married 10 years but had no children. As a girl she had always been troubled with constipation and her bowels had been very irregular as long as she could remember. Occasionally, after several days' obstinate constipation, she would suffer

from a most troublesome diarrhœa and would pass a considerable amount of mucus.

For the last five years she had noticed membranous casts in the stools. These were nearly always present and occasionally she passed some bright red blood in the motions. She had undergone prolonged periods of rest on her back in bed with careful dieting, and had had at one time or other all the various intestinal antiseptics tried on her. She was a thin, spare woman with lax abdominal walls. The pain was referred along the course of the whole colon from cæcum to sigmoid. Both ascending and descending colon could be felt as firm tender swellings on deep palpation. She had a good deal of dysmenorrhœa, for which she had been treated for many years without much benefit. The bowels were extremely constipated, never being opened without purgatives or enemata. The motions contained a considerable quantity of membranous casts which were quite structureless on examination. There was a certain amount of general enteroptosis, and both kidneys were palpable but not unduly moveable. She was despondent. Her appetite was poor and very capricious. She seemed to have resigned herself to the life of a confirmed invalid. The thoracic organs were apparently normal. Her weight was 7 stones 10 pounds. She was at first put to bed and put upon a rigid Weir-Mitchell treatment. Every morning after an enema a long rectal tube was passed and the colon was irrigated with warm water. At the end of three weeks she had not improved. There was still the same abdominal pain and occasional passage of membranes and the depression had markedly increased.

The risks and inconveniences of an appendicostomy were explained to the patient and her friends, and the operation was performed in September, 1908. The operation itself was extremely simple. A small 2½-inch incision was made over the cæcum, and the appendix, which was 3 inches long and quite free from adhesions, was brought through the wound and fixed to the parietal peritoneum and skin by three catgut sutures in the upper angle of the wound. The rest of the wound was closed. The end of the appendix was cut off flush with the skin three days afterwards. A No. 10 soft red rubber catheter was passed into the colon through it, and to this was attached an irrigator containing plain boiled water. Three pints were allowed to pass gently into the bowel while a large rectal tube was in the rectum. The fluid then began to flow from the rectal tube. This lavage of the colon was repeated daily for several weeks. There was at no time any leakage from the opening in the appendix, and the only trouble experienced was an occasional difficulty in the passage of the catheter through the opening in the skin.

At the end of ten days the patient had much improved in her general condition. She lost all her abdominal pain. The sleeplessness, from which she had suffered, entirely disappeared, and she began to put on weight. Various mild antiseptic solutions were used to irrigate the colon. But none seemed any better than plain warm water. Membranes were still occasionally passed with the motions per rectum, but in much smaller masses. The irrigation was continued and is still being continued three times a week. The patient has been taught to do this for herself with the aid of a domestic servant. She expresses herself as quite well. But at present I have not countenanced the closing of the opening lest her symptoms and old troubles should recur.

Appendicostomy is to be preferred to cæcostomy for the following reasons: 1. It is a much easier operation, the shock and risks of the operation being practically *nil*. 2. It is free from the great disadvantage of cæcostomy—namely, the leakage of irritating intestinal contents through the artificial opening. 3. The opening in the appendix can be kept patent almost indefinitely, and does not confine the patient to bed, or render him an invalid. 4. The opening is extremely easy to close. In fact, it will often close itself spontaneously if a catheter is not passed through it regularly.

Acute Ulcerative Colitis.

Of the causes of acute ulcerative colitis we know but little. Some authorities, notably Rolleston, include all such cases under the term dysentery, and maintain that bacteriological examination shows them to be identical. But Osler, Allchin, and others hold that they are separate and distinct diseases. Bright's disease would certainly seem to be a predisposing factor and the disease seems equally common in men and women.

Below are the brief clinical notes of a case lately under my care in the General Hospital and where a cæcostomy performed upon the patient when he was almost moribund undoubtedly saved his life.

CASE 2. *Acute ulcerative colitis; cæcostomy; cure.*—A collier, aged 40 years, was admitted at the beginning of September, 1907, under my colleague, Dr. T. S. Short, with headache, vomiting, and diarrhœa. He was a patient under the care of Mr. J. Bernard Garman and had been seriously ill for a fortnight. Five years previously he had had pneumonia. He had never been out of England and had always worked down a mine. On admission he was in a semi-conscious condition. His temperature was 103° F. and the pulse was 90. Sordes were present on the teeth and the breath was extremely foul, and he had profuse diarrhœa. The abdomen was distended. The spleen could not be felt. There were no rose-coloured spots. There were no adventitious sounds in his chest. An examination of his blood showed the leucocytes to number 7000 per cubic millimetre. Widal's test gave a negative reaction.

During September the patient remained in much the same state, the temperature varying from 100° to 103° and his pulse from 80 to 90, and the diarrhœa being continuous. Several times he had hæmorrhage from the bowel, having severe hæmorrhages on Sept. 26th and Oct. 7th and 11th. During October his condition became gradually worse. The diarrhœa persisted, the number of actions of the bowels increasing from 7 or 8 to 10, 12, 14, and 16 times a day. The motions were extremely offensive and often seemed to consist of pus only. His weakness and emaciation daily increased. The abdominal distension gave place to extreme retraction, bed-sores appeared on his legs and back, and though his temperature became normal or subnormal his pulse increased in frequency till it ranged from 120 to 130. Widal's test always gave a negative result. But a gradual leucocytosis made its appearance and on Nov. 4th was 20,000.

I saw the patient on Nov. 10th in consultation with Dr. Short. We decided that he had acute ulceration of his large intestine, the nature of which was uncertain, and as every kind of drug administered by the mouth had failed and the patient was evidently going to die unless the colitis could be checked, we decided to give him the slender chance a cæcostomy afforded. This was advised in order if possible to divert the fæces from the lower bowel and to enable us to irrigate the inflamed and ulcerated colon.

On Nov. 11th, two and a half months after the commencement of his illness, I performed a cæcostomy. On opening the abdomen the small intestine was thin, pale, and almost empty, and showed no signs of inflammation. The cæcum and ascending colon as far as it could be seen were thickened and sacculated in a most marked manner. His extremely weak condition would not permit of a thorough examination of his descending colon and sigmoid. A small pouch of the cæcum was fixed to the parietal peritoneum and the wound was closed. This pouch was opened on the following day and a Paul's tube was tied in. Drainage, however, through this was inefficient, and it was not until the tube came away that a free drainage of the bowel was effected. After this the large intestine was irrigated daily with large quantities of warm boric lotion. Ten days later the lotion was changed for a weak nitrate of silver lotion, and this soon began to check the diarrhœa. At the same time the motions passed per rectum became more fæcal in character and lost their extremely offensive odour. The patient himself at once began to improve and put on a little flesh. He was sent home at the end of December, when the same treatment was continued daily until February, 1908, when he returned to the General Hospital and the cæcal fistula was closed for me by Mr. Frank Barnes.

The man has since then completely regained his former health. He now weighs 11 stones 5 pounds and works at his old work in the pit and keeps a small beer-house. The scar at the seat of the operation is a weak one, but gives him no inconvenience as long as he wears a belt.

Mr. Garman, writing to me on March 7th, says the patient is in perfect health and that he never remembers to have had such a satisfactory case. He regards the case as one of typhoid fever in which the ulceration persisted in the colon after the fever had subsided. This may be so, but the

absence of many of the clinical signs and symptoms of typhoid fever—notably the absence of splenic enlargement, of any rose-coloured spots, the negative Widal reaction, and the fact that he had suffered from intractable diarrhœa for 12 years previously, point to some other cause being present as well.

The case above related is fairly typical in its symptoms. There is profound diarrhœa, and blood is almost always present in the motions, mixed with a most offensive mucus and pus. There are usually marked abdominal tenderness, rapid and progressive emaciation and weakness, the patient in some cases lapsing into a typhoid condition. The temperature is irregular and there may be profuse perspirations.

Diagnosis has to be made from abdominal tuberculosis, from typhoid fever, and from malignant ulceration of the lower bowel with spurious diarrhœa, and is in some cases a matter of extreme difficulty. A sigmoidoscopic examination should be made whenever practicable in these cases, and will often materially help in arriving at a right conclusion. The prognosis seems from the reported cases to be a very bad one; intestinal perforation is frequently a cause of death. Murrell[1] reported five cases treated on purely medical lines with one recovery and four deaths.

Active surgical treatment is urgently called for in such cases. The large bowel must be kept empty and at rest, and yet to starve such patients is to kill them, while rectal feeding is out of the question. An artificial opening is made in the cæcum, or the appendix is fixed to the abdominal wall and opened. The operation can be done in a very few minutes and with but little or no shock. Intestinal contents are in this way diverted from the ulcerated colon, which is at the same time put at rest and under the best conditions for repair. Through the opening thus made the inflamed and ulcerated bowel can be daily irrigated. H. C. Curl has reported 11 such cases, with eight recoveries and three deaths. One of the deaths occurred in a patient who was already moribund when operated upon. Later, when the patient is convalescent and the ulcerative processes have come to an end, the cæcostomy or appendicostomy opening is easily closed.

Chronic Ulcerative Colitis.

There is little more to be said from a surgical point of view than has already been said in dealing with acute ulcerative colitis. The urgency of the symptoms is not so great and milder medical measures may be given a prolonged trial. But when the diarrhœa still continues with the passage of blood and mucus, and despite treatment the patient is progressively losing weight and passing, as they frequently do, into a neurasthenic condition, an appendicostomy with prolonged daily irrigation of the colon will in many cases effect a cure. Many such successful cases have been reported. A former house surgeon of mine, Mr. Bernard Dawson,[2] has collected ten such cases, including one under the care of Professor Arthur Foxwell at the Queen's Hospital, in all of which beneficial results followed the operation.

Into the technique of the operation of appendicostomy it is not necessary to enter. With a normally situate appendix the operation is simplicity itself. It can be brought out of the abdomen through a one and a half inch incision over McBurney's point. It is pulled out until the cæcum is flush with the parietal peritoneum and fixed with two or three fine silk sutures. 48 hours afterwards it is cut off close to the skin and a No. 10 catheter is passed through its lumen into the bowel. This may be left in for a few days to permit contraction of the orifice of the fistula. There is practically no leakage of fæces through the small opening, and when the necessity for the opening no longer exists it is closed with the greatest facility.

The operation will, in my opinion, in the near future become a popular one owing to the ease of its performance and comparative freedom from risk. It has already been done for chronic constipation, for drainage and irrigation of the colon in colitis, for drainage of distended intestine in acute septic peritonitis, and as a substitute for nutrient rectal feeding.

Birmingham.

[1] THE LANCET, March 12th, 1904, p. 721.
[2] Brit. Med. Jour., August 1st, 1908.

A CASE OF FATAL HÆMORRHAGE INTO THE PONS VAROLII IN A YOUNG INFANT.

BY SIDNEY PHILLIPS, M.D. LOND., F.R.C.P. LOND.,
SENIOR PHYSICIAN TO ST. MARY'S HOSPITAL AND THE LONDON FEVER HOSPITAL, ETC.

THE patient, a female infant, was breast-fed till the age of ten months, and afterwards brought up on cows' milk and water. She was always a very healthy child. On March 8th, 1909, being then 14 months old, she had a sudden attack of what the mother thought to be bronchitis, and was taken to the casualty department of St. Mary's Hospital. This soon passed off and the child seemed quite well when the mother put her to bed at 3 P.M. on March 15th, while she went out. On her return an hour later she found the child in the same position as she had left her, but quite unconscious and with vomit all around her. She was at once admitted to St. Mary's Hospital quite comatose and with complete flaccidity of all the muscles. The pupils were equal and normal in size, but did not react to light; knee-jerks were present but not Kernig's sign. The pulse was 70, and the respirations were quiet, regular, and 16 per minute. Urine drawn off by the catheter was faintly alkaline, of specific gravity 1022, and contained a trace of albumin. No sign of organic disease could be found in the thorax or abdomen. The face and surface of the body were very pale; the temperature was 96·6° F. The child was well nourished and appeared to have been well cared for. On the left malar region were three small linear parallel bruises. The mother said she had noticed them on the previous day, but had not thought anything of them, and knew of no blow or fall. During the whole of her stay in hospital the child remained in the same deep coma; there was never any movement of any part of the body except some slight twitching of the lips on the 19th and movement of the left arm on the 24th. There was no optic neuritis. Atropine was put in the eyes the day after admission, after which the size of the pupils gave no information; the knee-jerks were lost after March 19th, and the urine freely secreted contained no albumin after the 17th. The pulse-rate quickened gradually to 140 a minute and on one day (the 22nd) to 160 a minute, when the temperature, otherwise subnormal, rose temporarily to 102°.

During the prolonged period of coma sudden respiratory "crises" occurred; thus on March 17th respirations suddenly rose in frequency from 16 to 42 per minute, and simultaneously the bronchial tubes became flooded by a copious secretion of mucus, with loud rhonchi all over the chest. This all subsided in a few hours, the breathing again becoming tranquil and slow—only 14 per minute on the 19th. But similar attacks of dyspnœa and mucus secretion occurred from time to time. On the 25th vomiting came on, and the child died after 14 days of uninterrupted coma on March 29th. Throughout her stay in hospital she was fed by the nasal tube.

Necropsy.—This was performed by Dr. B. H. Spilsbury on March 30th. As the brain was removed some partly altered blood was seen in the subdural space at the base of the brain and extending upwards towards the vertex. There was also a collection of recently extravasated blood in the subdural space around the right lateral lobe of the cerebellum. On section of the pons in the right half throughout its whole length was a brownish semi-fluid, apparently a hæmorrhage, with partial absorption and decomposition of the clot; it came close to the median line, but did not reach the surface of the brain at any point and was not in communication with the subdural effusion. There was no sign of injury to the skull, but the dura mater was everywhere slightly adherent to the inner surface of the cranial bones, which were roughened. The other organs of the body were healthy, but there were some areæ of commencing broncho-pneumonia.

Remarks.—The sudden prolonged coma evidently resulted from the hæmorrhage into the pons; the subdural hæmorrhage was more recent and perhaps gave rise to the slight movements which had been noticed of the lips and arm. The cause of the hæmorrhage was unexplained; there were no indications of syphilis or of cachexia of any sort, and it seems more probable that the slight bruising on the face resulted

from a fall due to disturbance of the cerebral circulation before the actual hæmorrhage occurred than that the latter resulted from any violence. The sudden respiratory crises and the very prolonged duration of coma, together with the rarity of pontine hæmorrhage in an infant, seem to render the case worthy of record.

Upper Brook-street, W.

INTERNAL HERNIA; EXTENSIVE RESECTION OF GANGRENOUS ILEUM; RECOVERY.

BY W. SAMPSON HANDLEY, M.S. LOND., F.R.C.S. ENG.,
ASSISTANT SURGEON TO THE MIDDLESEX HOSPITAL; SURGEON TO THE BOLINGBROKE HOSPITAL, WANDSWORTH; LATE HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THE following case presents many points of interest in common with Mr. A. E. J. Barker's case [1] of extensive enterectomy recorded in THE LANCET in 1908.

A married woman, aged 29 years, was admitted to the Bolingbroke Hospital on August 5th, 1908. About July 30th she hurt herself in getting over a fence, and had some hypogastric pain for a day or two. She felt nothing more until noon on August 4th, when severe colicky hypogastric pain, without diarrhœa, came on two hours after eating some plums. The bowels were opened once on this day; subsequently neither flatus nor fæces were passed. On admission on August 5th the hypogastric pain had increased in severity, and was referred chiefly to the left lower abdomen. The temperature was normal and the pulse 92. There was no dulness nor abdominal rigidity, but marked hypogastric tenderness was present. A definite swelling could be felt, with an irregularly curved upper border reaching about halfway to the umbilicus. It had a soft, semi-solid consistency, reached higher on the left than on the right side, and underwent spontaneous changes in shape. There was no general abdominal distension. By the vagina a soft, boggy swelling could be felt occupying the posterior fornix and extending nearly to the pelvic wall on either side. The same swelling could be felt by the rectum. Mr. D. M. Aitken, who saw the case on admission, diagnosed a volvulus of the intestine. An enema was without result, the pulse rose within a few hours to 100, the griping pain continued, there was some retching, and the facial expression was drawn and anxious. There was no evidence of pregnancy, although in some respects the case simulated extra-uterine gestation.

At 9 P.M. Mr. J. H. Mayston gave choloroform and ether, and with Mr. Aitken's assistance I opened the abdomen by a median hypogastric incision. A considerable amount of dark free blood escaped, and a faint putrescent odour was perceptible. A mass of greatly distended reddish-black coils of small intestine completely filled up the pelvis, and was delivered after some difficulty through the wound. The small intestine above showed moderate distension. At first the mass appeared to be a volvulus, but closer examination showed that the intestine had passed through a hole in the mesentery of the lowest portion of the ileum, by which it was tightly strangulated and immoveably held. The affected loop of intestine was gangrenous on both aspects of the mesenteric opening, doubtless because the strangulation involved not only the intestine but a considerable length of its mesentery. A clamp was applied to the intestine on either side of the hole in the mesentery, and the bowel was freed in the only way possible by cutting it across between the clamps. The necrotic portion, 33 inches in length and extending down to the ileo-cæcal valve, was then resected. Most of the vessels in its mesentery were thrombosed. The upper divided end of the ileum was implanted into the cæcum by continuous silk sutures in the ordinary way. No irrigation was used. The operation lasted 50 minutes. At its termination the colour was good and the pulse 136. During the first six hours after operation the patient absorbed from the rectum almost without leakage about three and a half pints of saline solution given by the continuous method, and the pulse had fallen to 112. Subsequent after-treatment included the half-recumbent posture, very restricted nourishment by the mouth, the subcutaneous administration of normal horse serum, and the repetition for some hours daily of rectal irrigation with saline solution. On the day after operation the bowels were opened by small hourly doses of calomel. On August 11th the patient passed a dead ascaris, with its cuticle peeling off. No abdominal distension appeared after the operation, and the patient made an uninterrupted recovery, a result largely due to the prompt action of her medical attendant, Dr. J. F. G. Bent of Southfields. When it is more generally recognised that the diagnosis of intestinal obstruction should rest almost exclusively upon the presence of complete constipation, not yielding to enemas within a period measurable by hours rather than days, the results of operative treatment will improve enormously. For practical purposes fæcal vomiting should be struck off the list of symptoms of intestinal obstruction. In nearly all cases it is merely the herald of approaching death, and to wait for it is to ensure disaster.

This case, taken with Mr. Barker's, in which also no appreciable distension of the bowel above the obstruction had taken place, appears to show clearly that the main lethal factor in cases of strangulation is neither shock nor the mere presence of a mass of dead tissue, however large, but the subsequent collection of poisonous material at high pressure in the bowel above. Fortunately this stage had not been reached in either case.

New Cavendish-street, W.

[1] A. E. J. Barker: An Extensive Enterectomy for Gangrene, THE LANCET, Sept. 5th, 1908, p. 706.

A CASE OF BACILLARY INFECTION OF THE URINARY TRACT TREATED BY THE CORRESPONDING SERUM AND VACCINE.

BY H. O. BUTLER, M.B., B.C. CANTAB.

THE patient, a multipara, aged 50 years, was first seen about three months before the acute illness. With the exception of obstinate constipation the previous history gave nothing of importance. She then complained of difficulty in holding her urine and a scalding pain on micturition. Examination revealed no tenderness over the kidneys. A catheter specimen showed an acid urine with large numbers of pus cells and enormous numbers of organisms. Treatment consisted at first of rest and urinary antiseptics in great variety. The result was quite unsatisfactory. It is true that periods of improvement occurred, the frequency of micturition diminishing from every half-hour to perhaps from 12 to 18 times a day. I could not satisfy myself, however, that this was due in any way to the treatment beyond the resting in bed. Consequently I urged isolation of the active organisms and vaccine treatment. This was refused and I ceased attending.

Three months after when I was called to see the patient I heard that during the interval she had never been well, as there had always been scalding and inability to hold the urine for more than two hours. At this time I found her looking acutely ill, very flushed, and with a pulse of 130. She complained of pain in the dorsal region over the left kidney, running down to the groin, a constant desire to pass urine, and acute scalding pain during the passage. No tenderness over the ureter, however, was present on examination per vaginam, though pressure over the left kidney was resented. A catheter specimen of the urine was obtained and sent off for bacteriological examination. The report stated that in addition to a large amount of pus the bacillus coli and a streptococcus were present, this latter being in much larger numbers. A mixed vaccine of the two organisms was ordered to be prepared, and as the woman was acutely ill I gave a subcutaneous injection of 20 cubic centimetres of Messrs. Burroughs and Wellcome's polyvalent antistreptococcus serum, my choice being guided by the streptococcus being present in so much larger numbers and because the woman looked so ill. No effect whatever was produced.

On the next morning, as the patient refused subcutaneous injection, 20 cubic centimetres more were mixed with normal saline and given as an enema, and this was repeated in four hours. Again no result was obtained. In the evening 25 cubic centimetres of anticoli serum were injected subcutaneously, and in 12 hours the temperature had fallen from

101·5° to 99° F., the patient felt better, the pain over the kidney lessened, and micturition was less frequent and less painful. In 12 hours' time, as I understood that the anticoli serum was efficacious per rectum, and in deference to the patient's wishes, 25 cubic centimetres were given as an enema with no result. Consequently on the following afternoon the second dose of 25 cubic centimetres was given subcutaneously. The temperature within 12 hours fell to normal and the pain over the kidney and the scalding were much relieved. During the next three days the patient's temperature rose slightly, but she was obstinately constipated, and when this was relieved the temperature declined. The frequency of micturition had by this time fallen to about nine times in the 24 hours and this gradually lessened until the normal was reached.

Twelve days after the onset of the acute illness the mixed vaccine was given and caused a rise of 0·8° within 12 hours and lasting about 12 hours. Examination of the urine at this time showed only a few pus cells, and during the next fortnight these disappeared. The next injection was given in a fortnight's time and then at intervals of one month. On each occasion, however, though new needles and strict antiseptic precautions were taken, a great deal of pain at the site of the puncture was caused; there was considerable swelling, and there can still be felt a hardening of the subcutaneous tissue.

The prompt action of the anticoli serum, the absence of action of the polyvalent antistreptococcus serum, and the uselessness of rectal injection of the anticoli serum seem the points of interest in this case.

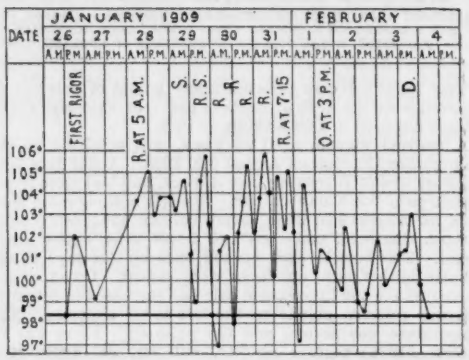
Chiswick, W.

AN INSTRUCTIVE FATAL CASE OF APPENDICITIS WITH ADVOCACY OF EARLY OPERATION.

BY J. S. BODEN, M.B., B.S. LOND.,
PHYSICIAN TO THE FINCHLEY DISPENSARY;
AND
EDRED M. CORNER, M.C. CANTAB., F.R.C.S. ENG.,
SURGEON TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET; AND SURGEON TO ST. THOMAS'S HOSPITAL IN CHARGE OF OUT-PATIENTS, ETC.

Dr. F. J. Smith's report of an obscure and fatal case of appendicitis decided us to bring this case forward.[1] Like his, it was mysterious and indecipherable, the patient dying from pyæmia after a few days' illness. In his case general peritonitis was a part of the pyæmia. Both began with indefinite abdominal symptoms and diarrhœa. Both had rigors, which denoted the generalising of the poison, and, we know now, the futility of operation. There can only be one method of treatment likely to be successful in such cases—namely, early operation. It is to urge this and to aid others, when they meet similar obscure cases, that we venture to publish this paper.

The patient, aged 15 years, a lad of markedly bilious temperament, had not been very well for some days—"lackadaisical"—to use his mother's expression. On the evening of Jan. 21st he went to a whist drive and partook during the evening of sardine sandwiches, a sausage roll, trifle, jelly, and claret cup. Next day he was very lethargic, went to lie down on his bed in the afternoon, getting up for a walk before tea. During the evening he complained of headache, sore throat, and his temperature was found to be 102° F. On the 23rd he remained in bed all day, his temperature falling from 101° in the morning to normal by the evening; during the day he had four loose actions of the bowels. On the 24th, with the exception of a continuance of the diarrhœa (three actions) he appeared quite well, taking his ordinary food at meal times. His morning temperature being normal, he remained up from after breakfast till 10 P.M., when he went to bed apparently neither over-tired nor feverish. The first phase of the illness terminated at this time, as is shown on the chart. On the 25th he got up to breakfast and appeared well till mid-day, when he was given some bovril, which he vomited about two hours later, followed by some retching and pain in the upper part of the abdomen. He was seen that evening and found with a temperature of 98°, a pulse-rate of 82, a furred tongue, heavy breath, and some epigastric tenderness. His bowels acted twice loosely on this day. On the morning of the 26th he expressed himself as feeling better; there had been no further sickness and he said that the pain in his stomach had gone. He was thirsty, but had no desire for food. His temperature was normal; his tongue was covered with a thick white fur; the epigastric tenderness had gone, but on examining his lower abdomen there were distinct rigidity of the right rectus and an indistinct resistance to be felt just above and internal to the right anterior superior iliac spine. Just above the crest of



R, Rigor. S, Sponged. O, Operation. D, Dressed under an anæsthetic.

the ilium and at the outer border of the quadratus lumborum pressure elicited pain. Per rectum there was no fulness or resistance. A provisional diagnosis of catarrhal appendicitis was made. At 6 P.M. the same day he had had a slight rigor and his temperature rose to 102°, his pulse-rate was 100, the "on guardedness" of the right rectus had disappeared, and a fairly definite resistance in the right lumbar region could be felt, which was not markedly tender on pressure. The bowels were inactive during the 26th and 27th. On the 27th the patient passed a very fair night, rousing at intervals of two hours for a drink, not complaining of pain in the abdomen, and able to lie quite comfortably with the right thigh extended. At 8 A.M. his temperature was 99·2°. When seen at midday it was 105°, with a pulse of 114; local examination showed no change from the previous night. At 8 P.M. his temperature was 104·6°, his pulse was 120, and his appearance strongly suggested typhoid fever. During the evening, on and off, he had pain in the right side of the abdomen, which was relieved by the application of a hot-water bottle, and passed a very fair night till 5 A.M. on the 28th, when he had a second slight rigor with a return of pain in the right side of the abdomen. His temperature after the rigor was 103·2°. At 8 A.M. it had fallen to 99·4°, but had risen again at 10 A.M. to 105° with a pulse of 105. A blood specimen was taken which gave a negative typhoid reaction. In view of the second rigor, Mr. W. H. Battle was asked to see the case and be prepared to operate. When he saw the boy at 2 P.M. the temperature was 103° and he had a good quality pulse of 98; his tongue was certainly cleaner, and it was considered that operation was not necessary on account of the lad's excellent general condition, the fact that the bowels had acted without pain twice in the night, the indefinite character of the local symptoms, the probability that the appendix was lying behind and to the outer side of the cæcum (the most favourable position for any active mischief remaining localised), and that it was the seventh day of the illness. The same evening (the 28th) the spleen could just be felt and the lad's condition was so like that of typhoid fever that relief was felt no operation had been done during the afternoon. His temperature remained fairly steadily at from 103° to 104° till next morning (the 29th), with a pulse of from 98 to 104. At 10 A.M. his temperature had fallen to 99° and his pulse to 76. During the three days (28th to 30th) the bowels continued to act loosely from three to five times in the 24 hours. A third

[1] THE LANCET, Feb. 13th, 1909, p. 463.

rigor occurred on the afternoon of the 29th, his temperature at 6 P.M. rising to 105·6° (the pulse was 112), reduced by sponging to 102·6° and falling to normal at 10 P.M. and to 97° at 2 A.M. (a fall of 8·6° in eight hours). Apart from the remittent (and intermittent) temperature the boy's condition appeared good and there was no marked change either generally or locally. Dr. T. W. Hicks of Finchley saw the case in consultation on the 30th. There were no indications for operative interference and nothing could be found to account for the rigors; he had had a fourth in the early morning of that day. The local condition at this time prompted the somewhat old-fashioned diagnosis of "typhlitis," a definite, only slightly tender, sausage-shaped swelling being felt with its large axis vertical rather external to the region of the cæcum. The temperature kept very remittent on the 30th and 31st, and six rigors occurred during the 48 hours. When seen by Mr. Corner on Feb. 1st the patient was bright and cheerful, the tongue was covered with white fur, the temperature was 99·6°, and the pulse 84. The abdomen was not distended, moved on respiration, could be palpated all over, and was only tender in the right loin. The right rectus was a little more tense in its middle than the left. Some cutaneous hyperæsthesia was present in the loin and at the side; there was none in front. The liver was not tender or enlarged. Considering the *pros* and *cons* of the case the appendix seemed most likely to be the cause of the trouble, and, in view of the boy's getting worse since he was seen on the Thursday before by Mr. Battle, operation was recommended, on the distinct understanding that the infection might have become too generalised for the operation to save the boy.

Mr. W. S. Rooke, anæsthetist to the Great Northern Hospital, gave the anæsthetic. The abdomen was opened through the right rectus and the cæcum found. It was fastened by adhesions into the loin. Gauze plugs were used to pack off the peritoneal cavity, which was uninflamed, and the proximal portion of the appendix was followed to the tip which was found in a small abscess cavity under the liver at the back of the abdomen and on the outer side of the ascending colon. It was removed, a gauze plug packed in the abscess cavity, and the wound closed round the gauze drain. The boy bore the operation well. On examination the distal half inch of the appendix contained a fæcal concretion, was gangrenous at the tip, and perforated over the concretion. The patient rallied well from the operation and his condition on Feb. 2nd was distinctly hopeful; there were no further rigors, no sickness, and the bowels acted naturally twice during the day; he had an attack of faintness during the early morning of Feb. 3rd and slight icterus was noticed. He was dressed under an anæsthetic at midday, and at 2 P.M. his temperature rose to 103° and his pulse to 140 (at no time during his illness up to this time had his pulse exceeded 120), and on examination an area of harsh pleural friction was found over the lower left axillary region, with physical signs pointing to some underlying pneumonic consolidation. From this time he went rapidly downhill with dilatation and failure of heart, and died at 9 A.M. on Feb. 4th.

This case illustrates many clinical object-lessons in an important and common disease. 1. The great value of early operation (within 36 hours of the onset, which would have been the only chance of saving the patient). Early operation is the method of the future; far more appendices will be removed in the acute stage and far fewer in the quiet interval. When the patient is a young subject, in whom appendicitis is so common, an exploratory operation is justifiable in the early stage, even when the diagnosis is indefinite. 2. The illness began with indefinite abdominal symptoms and diarrhœa, unaccompanied by sickness. The diarrhœa is a toxic symptom, and if that symptom is present during or followed by appendicitis, that appendicitis is of a more than usually dangerous form. 3. Rigors are infrequent with appendicitis. A rigor at the beginning of the illness may mark the onset of an unusually toxic appendicitis. But should it occur later in the disease, a rigor suggests pylephlebitis, portal pyæmia, or general pyæmia, under which circumstances a fatal result may be expected. 4. The type of fever as shown in the accompanying chart is very unusual in appendicitis. It is markedly remittent. 5. But one of the most remarkable clinical features of the case was that when the temperature was low, the pulse was quiet, and the boy not ill; yet he was probably doomed by the time of the second or third rigor. 6. Clinically, the illness was in two phases, the first without rigors subsiding before the second began. Although the illness appeared to subside, the cause of it did not, the suppurative process reawakening and rapidly killing the patient. The almost universal formation of pus in appendicitis constitutes its great danger and variations.

To sum up, this case illustrates the import in appendicitis: of an indefinite onset, of continued diarrhœa, intermittent fever, and rigors. It shows how both the local and general clinical conditions may be unreliable. And that in indefinite cases it is better to rely on probability—a young person with serious abdominal mischief very probably has appendicitis, the seriousness of the illness may show itself in the pulse, the temperature, the sickness, the diarrhœa, &c.—and act on that, than to rely on the very indefiniteness of the case and pursue ordinary domestic treatment.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF RUPTURE OF THE HEART.

BY WILLIAM H. DAVIS, M.D. R.U.I.,

LATE HOUSE SURGEON, ROYAL VICTORIA HOSPITAL, BELFAST; HONORARY PHYSICIAN TO OSSULSTON CONVALESCENT HOME, HENDON, N.W.

As rupture of the heart is a lesion of somewhat rare occurrence, the following case may be of interest.

At 5.45 A.M. on July 18th, 1908, I was called to see a woman, and on arrival found her dead in bed. I had not previously attended her. She was a flabby, obese, and thick-set woman, aged 62 years; her weight was 13 stones, and she was 5 feet in height. Her previous history, which I obtained from her daughter, was as follows. She had had 12 children and five miscarriages. For a considerable number of years she had been in poor health, and several attacks of influenza were the only definite illnesses recorded. For the past three years she had suffered much from œdema of the feet (worse in the evening and after standing), dyspnœa on exertion, and attacks characterised by a feeling of faintness, clammy sweats, and vomiting. Two years ago she was told by a homœopathist that she had "diabetes." The daughter stated that her mother used to drink "quarts and quarts of water and cold tea" daily, and that she was troubled by extreme irritability of the skin and "could almost scratch her legs off."

On July 16th, two days before her death, the woman attended as usual to her household duties. On the morning of the next day she complained of feeling unwell, and about mid-day had one of her "fainting" attacks, in which she lay helpless, cold and clammy, and short of breath. During the day she vomited several times and had diarrhœa and some pain in her abdomen. Her daughter first saw the vomit towards evening and she described it to me as being "chocolate-coloured." At 8 P.M., after another attack of sickness and diarrhœa, the patient retired to bed, and at 11 P.M. she had another severe attack of vomiting, on both of these occasions the vomit being as described above. At 5 A.M. the vomiting returned with increased severity, and while "straining to get anything up" she suddenly gave a rattle in her throat and fell back dead.

A post-mortem examination was held. With the exception of some passive congestion of the liver and kidneys and a dilated stomach—the mucous membrane on the anterior wall of which showed three areas of ecchymosis varying in size from that of half-a-crown to that of a shilling—the chief interest of this necropsy lay in the cardiac condition. On puncturing the pericardium about three ounces of blood-stained fluid escaped. On enlarging this opening so as to expose the heart, this organ was seen to be flabby, toneless, and collapsed, brownish-red in colour, and to be lying on a large blood clot of the size of a saucer, and about one and a half inches in thickness at its thickest part. On the upper part of the anterior wall of the left ventricle, near the septum, a tri-radiate rent was seen. When pressure was made on the ventricle blood oozed out through this opening, which was large enough to admit the tip of the little finger. On

incising the left ventricle the anterior wall was found to be abnormally thin, being in fact only a quarter of an inch in thickness, and of this fully two-thirds of the outer part showed advanced fatty degeneration. The valve segments were normal, but there was some relative incompetence of the mitral and tricuspid valves.

Church End, Finchley, N.

A NOTE ON A CASE OF HYDATID CYST OF THE UTERUS; HYSTERECTOMY; DEATH AFTER 49 HOURS.

BY SOMERTON CLARK, F.R.C.S. EDIN.,
SURGEON TO THE MISSION HOSPITAL, DERA ISMAIL KHAN, INDIA.

Lāl Bībī, an Afghan, from 30 to 35 years of age, was brought to hospital on Dec. 25th, 1908, by her father who is a shepherd. The patient had noticed a swelling in the suprapubic region 13 years ago. For four years this had gradually increased in size till it was of the size of a nine months pregnancy. The growth had never been painful. The appetite had always been good and the general health unimpaired. The menses had been quite regular both as to time and quantity, except for one whole year two years ago when they stopped altogether. Last year they again became regular. There had been no pregnancies.

On inspection the abdomen appeared to be fuller on the left side. On tapping two or three drops of whitish-yellow fluid escaped. Per vaginam, the cervix uteri was found to be effaced and the os uteri to be of the size of a pea, while the uterus was equally distended below and in every particular presented the condition of a woman in labour at full time.

Abdominal section was performed on Dec. 31st. The incision was three inches in length below the umbilicus. The uterus presented. The cavity of the uterus was opened and a liver trocar was thrust into the tumour, from which daughter cysts were seen to escape. On drawing the tumour out of the abdomen, the large bowel was found to be adherent for five inches. The uterus and the greater part of the tumour were then removed. The remaining part of the tumour was of the size of half a cocoanut and it could not be dissected off the bowel, and so the lining membrane was destroyed with carbolic acid and scraped. The edges were brought together with a purse-string suture. A quart of saline solution was poured into the abdomen and the wound was closed. The operation lasted for 55 minutes and at the end the patient suffered from shock. The temperature was below 95° F. During the afternoon it rose to 98°. On the next day (Jan. 1st, 1909) the patient rallied, but she became weaker during the following night. On the next morning the pulse became faster and faster and improved only for an hour after the injection of five minims of strychnine at 11 A.M. At 12 noon three pints of saline solution were transfused into the left basilic vein. At 1 P.M. the patient died. There was no sign of peritonitis.

With regard to the source of the disease, the father of the patient had never been to Australia, nor had any of his relatives. But the Povindahs, to a tribe of which this woman belonged, have dealings with Australia and work on the goldfields, pointing to the introduction of the disease from Australia.

I cannot end without thanking Miss Werthmüller, Dr. A. J. Turner, and Dr. Hal Barnett for their assistance.

Dera Ismail Khan, India.

THE SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—The annual general meeting of this society will be held at 11, Chandos-street, Cavendish-square, London, W., on Friday, June 18th, at 5 P.M. A dinner, limited to 60 covers, will be held the same evening (June 18th), at the Trocadéro Restaurant, Piccadilly Circus, at 7.30 P.M., Professor Ronald Ross, C.B., F.R.S., being in the chair. Tickets, 7*s.* 6*d.* each (exclusive of wine and cigars), may be purchased at the restaurant, before dinner, by Fellows and others interested in tropical medicine who have obtained admission cards from the secretaries.

Medical Societies.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases.

A MEETING of this society was held on May 26th, Dr. JAMES RITCHIE, the President, being in the chair.

Mr. C. W. CATHCART showed the following cases: 1. A case of Mistaken Diagnosis of Malignant Disease of the Abdomen in a man, aged 32 years. In 1905 he had suffered from severe pain beneath the left costal margin for a period of two weeks subsequent to an attack of influenza. The pain had then subsided and he had remained fairly well until three months before his admission to hospital, when he had a second attack of pain and later a third attack. He had lost weight considerably and on admission on Dec. 7th, 1908, he looked very ill, but no distinct gastric symptoms were present. On exploring the abdomen a large nodular mass was found in the abdomen, firmly adherent posteriorly and impossible to remove. Mr. Cathcart was so sure of the diagnosis that he did not detach a portion of the growth for microscopic examination and he made a diagnosis of malignant disease of the stomach wall. After recovery from the operation the patient was transferred to the Hospital for Incurables, where he improved rapidly. The swelling was now going down steadily and the man was regaining health. Such a case might be taken as one of the cures of cancer brought about by the employment of any of the reputed cancer cures. 2. A female patient after Double Nephropexy by Billington's method. She had suffered much from dyspeptic symptoms, as well as troubles connected with urination, and was quite unfit for her ordinary domestic duties. The right kidney was the most freely moveable, so it was first sutured, with great benefit to the patient, and later the left kidney was treated in a similar way. She had now put on much flesh and was in every way improved. The operation consisted in stripping the capsule from off the upper and posterior half of the kidney, twisting it into a cord and hooking it over the last rib, and fixing it in this position. The bare surface of the kidney became adherent to the surrounding parts, and the organ was fixed in a better position than by the usual methods. 3. A woman, aged 22 years, after operation for Idiopathic Distension of the Colon. At the operation the whole of the large intestine was seen to be distended and this extended down into the pelvis and passed directly into the rectum without there being any band or constriction. The diagnosis was made of obstruction caused by nerve spasm of the muscular fibres. An artificial anus was made in the left iliac fossa and all the severe symptoms passed off, and she had remained well since the operation two years ago.

Mr. J. W. DOWDEN and Mr. J. M. GRAHAM showed a series of patients to illustrate the Results of Treatment of Fractures of the Upper Extremity by means of Slight Support by Slings instead of by Rigid Splints. Such fractures as those of the clavicle, the greater tuberosity of the humerus, the surgical neck of the humerus, the shaft of the humerus, separation of the lower epiphysis of the humerus, and fracture of the olecranon along with double Colles's fracture were all treated by slings and daily gentle massage. In periods varying from three to five weeks the patients had all regained free use of their limbs and were without any deformity. Several of them were young children, and in these a light cardboard splint was applied at night.

Professor F. M. CAIRD showed a man who had lost weight and suffered from Constipation, accompanied by the passage of mucus and blood. There was a nodular fixed swelling in the lower part of the abdomen towards the left side. It was diagnosed to be a carcinoma of the sigmoid flexure. On opening the abdomen the tumour was found to be fixed to the back wall of the abdomen and to have caught up certain coils of intestine and involved them in the growth. These coils were divided and sutured and the tumour was dissected off. The patient was now well.

Dr. DAWSON F. D. TURNER showed the following cases: 1. A woman, who developed Rodent Ulcer on the Right Side of the Nose nine months ago. She had been treated with nine exposures to the x rays and one or two exposures to radium

and the ulcer was healed. 2. A lad who suffered from Warts on the Hands. These were treated by radium and had disappeared by one application of 45 minutes' duration of one centigramme of pure radium bromide. It required an interval of about 14 days before the full effect of the radium was seen, and in about three weeks from the exposure the warts dropped off. 3. A woman and a child suffering from Nævus and treated by radium. In the case of the woman the nævus on the cheek had had 19 hours' exposure to one centigramme of the pure salt at different times over different areas of the nævus. In the case of the child the nævus on the lower lip had been exposed twice, each exposure occupying 20 minutes. 4. A woman, aged 50 years, who suffered from Recurrent Scirrhus after operation in July, 1908. The scar was in a nodular condition and was painful. Treatment by x rays and radium was commenced in January, 1909, and the nodules had now disappeared as well as the pain. She had been treated with the Edinburgh Royal Infirmary one milligramme of radium during 49 hours.

Dr. G. A. GIBSON showed the following cases. 1. A well-marked case of Adipositas Dolorosa in a woman, aged 52 years, who suffered from breathlessness and discomfort. She was less than 60 inches in height and more than 60 inches in girth. She weighed 23 stones on admission but presently only 21 stones. 2. A case of Anterior Poliomyelitis, possibly due to Lead Poisoning. The patient, who was a man, exhibited well-marked wrist-drop in both hands with atrophy of the thenar and hypothenar muscles as well as those of the forearm, upper arm, and shoulder girdle. Some years ago he had been exposed to the influence of lead. The disease had commenced in the muscles of the right thumb and had spread upwards and then later had affected the left thumb muscles and left hand. This was the same mode of onset as in progressive muscular atrophy and the lesion here, as in lead poisoning, was in the multipolar nerve cells in the anterior cornua of the cord. 3. A case of well-marked Disseminated Sclerosis in a young man. All the symptoms were present with the exception of the staccato voice. The sensory symptoms were mainly altered in the manner of perversions.

Mr. DAVID WALLACE showed the following cases. 1. A man, aged 30 years, who had suffered from Pancreatic Cyst. Six months before operation he had been kicked on the abdomen by a pony, and for a few days had suffered much pain in the epigastrium, with vomiting half an hour after meals. For the next two or three months he had no discomfort. The pain then recurred, with the formation of a swelling to the right of the epigastrium. The tumour was of the size of a small cocoanut and was very moveable. On opening the abdomen the stomach was found pushed up and the transverse colon pushed down by the protrusion of a cyst covered with pancreatic tissue. The cyst was stitched to the edges of the abdominal wound on April 27th, and the patient was out of bed by May 17th. A small sinus was still present, but no fluid escaped, and at no time was the discharge great, nor was it composed of pancreatic fluid. 2. A female patient after Partial Gastrectomy. She was 56 years of age and had been troubled for several months with gastric symptoms and was very anæmic. A freely moveable tumour was easily felt; no free hydrochloric acid was present in the gastric secretion. The tumour was attached to the posterior wall of the stomach by a base one and a half inches in diameter, and was of the nature of an adeno-carcinoma. She was now in excellent health.

Mr. GEORGE L. CHIENE showed a lad, aged 16 years, who had suffered for four months from Pain in the Abdomen with Chronic Diarrhœa and Progressive Emaciation. On examination the abdomen was distended and a malignant stricture was found a short distance above the anus. Colostomy was performed and an exploratory incision through the abdominal wall showed that the coils of intestine were thickly studded over with white nodules. The diagnosis was made of scirrhus cancer becoming colloid.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held in Leeds on May 21st, Dr. J. W. Martin (Sheffield), the President, being in the chair.—Dr. E. O. Croft (Leeds) showed the Left Kidney from a fatal case of Pyelitis in Pregnancy. The patient died in coma a few hours after a series of three fits. She was six months advanced in her second pregnancy. The first pregnancy occurred six years before and the labour had been followed by convulsions. The kidney was hydronephrotic and contained a large quantity of milk-like pus. The dilated and thickened ureter contained caseous material. The right kidney was normal in size, and on naked-eye section showed evidence of slight fatty degeneration; its capsule stripped easily.—Dr. Croft also showed a Large Solid Broad Ligament Tumour of unusual character. It had been enucleated from the broad ligament of a woman aged 47 years without injuring the corresponding tube and ovary. It weighed 14½ pounds and measured 10 to 12 inches in various diameters. On section it showed a central well-defined oval mass five or six inches in diameter of the consistence of a soft uterine fibroid and of a light brick-red colour. This was surrounded by a broad band of material of a myxomatous appearance. From this area a considerable amount of fluid exuded. The tumour was apparently an œdematous fibroid which had undergone central "red degeneration" and myxomatous degeneration of the peripheral portion.—Dr. Carlton Oldfield (Leeds) showed a specimen of Carcinoma of the Cervix which had been removed by Wertheim's method. The patient was only 30 years of age. She was also suffering from syphilitic rupia and ecthyma. One enlarged lymphatic gland was found in the parametrium close to the cervix.—Mrs. F. Orford (Pontefract) showed a specimen of One-eyed Monster (Cyclocephalus).—Dr. J. B. Hellier read the notes of a case of Double Uterus and Vagina with Unilateral Hæmatocolpos. The patient, aged 16 years, had menstruated regularly and normally for two years, with a little dysmenorrhœa. For some months she had noticed a swelling at the vulva, but only at the monthly periods. Retention of urine led her to seek advice. There was a normal vaginal passage leading to a normal cervix uteri on the left side. On the right was a cystic swelling occupying the whole length of the vaginal wall and protruding from the vulva. On incising this about six ounces of dark-red inspissated menstrual fluid escaped. The right half of the uterus was also dilated, but there was no sign of a hæmatosalpinx. The vaginal septum was completely excised. The patient had menstruated normally since.—Dr. Hellier also showed a Uterus with Double Pyosalpinx. The uterine body had been amputated because both tubes and ovaries had to be removed. There was a septum extending to the os externum and completely dividing the uterus into two cavities.

Reviews and Notices of Books.

A System of Medicine, by Eminent Authorities in Great Britain, the United States, and the Continent. Edited by WILLIAM OSLER, M.D. Oxon. and McGill, F.R.S., Regius Professor of Medicine in the University of Oxford, England; Honorary Professor of Medicine in the Johns Hopkins University, Baltimore, &c.; assisted by THOMAS MCCRAE, M.D., F.R.C.P. Lond., Associate Professor of Medicine and Clinical Therapeutics in the Johns Hopkins University, Baltimore. Vol. IV.: Diseases of the Circulatory System; Diseases of the Blood; Diseases of the Spleen, Thymus, and Lymph Glands. The Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1908. Pp. 865. Price 30*s.* single copy, 24*s.* net per set of 7 vols.

THE first article in this volume deals with general considerations in cardio-vascular disease and is contributed by Dr. Charles F. Hoover of Cleveland, Ohio. The general physiology of the vascular mechanism is reviewed and the effects of disease are briefly considered. It is stated that the auricle is capable of throwing a wave of blood into the aorta, and this statement is supported by reference to some records made by Gerhardt, to the experimental work of Hurthle, and to personal observations of the writer of the article in a case of pulsus bisferiens, but we are hardly convinced by the brief evidence here given. The myogenic and neurogenic theories of the cardiac rhythmicity are carefully enunciated, and Dr. Hoover, in his discussion, appears to hold an even balance between them and admits that the problem is unsolved. On the whole, this article is somewhat

rambling in character, and, though it contains some valuable information, it is as indefinite in substance as in title.

An admirable article on diseases of the pericardium by Dr. A. McPhedran of Toronto gives a full and interesting account of the various forms of pericarditis and the other morbid changes occurring in that structure. The descriptions of adherent pericardium and of tuberculous pericarditis are much more complete than those usually given in text-books on medicine, and contain some valuable practical hints as regards diagnosis. The descriptions of hæmo-pericardium and pneumo-pericardium are also worthy of notice. Diseases of the myocardium are dealt with by Dr. Robert H. Babcock of Chicago in a well-written and carefully arranged article. The various forms of acute and chronic myocardial degeneration are clearly differentiated, the etiology, pathology, and symptomatology being adequately considered. The recommendations in regard to treatment are given in some detail and are thoroughly practical. The subject of acute endocarditis is one to which Professor Osler has devoted such special attention that the article in this System contributed by him is, as might be expected, a clear and authoritative presentation of the forms and manifestations of this group of morbid processes. Professor Osler differentiates a form of endocarditis affecting patients with an old valvular lesion and characterised by chronicity and by fever, to which he applies the name of chronic septic endocarditis. Hypertrophy of the heart is exhaustively discussed by Dr. Alexander G. Gibson of Oxford. The etiology and morbid anatomy of hypertrophy are dealt with in considerable detail, and reference is made to numerous monographs and to experimental researches. A clear distinction is made between hypertrophy occurring in a normal heart and that which develops as a defence against a pathological condition. Dr. Gibson also contributes an interesting article on insufficiency and dilatation of the heart. The arrangement of the subject matter is good and the factors leading to insufficiency, both acute and chronic, are conveniently classified.

Diseases of the valves of the heart are described in an article written jointly by Professor Osler and Dr. Alexander G. Gibson, for which we have nothing but praise, since it contains admirable descriptions of the various valve lesions and their effects, and incorporates the results of recent experimental and instrumental methods applied to their elucidation. Among the interesting questions which are discussed we may mention the third heart sound and its significance, the pathological physiology of aortic regurgitation on the basis of the experimental work of Stewart, the Austen Flint and Graham Steell murmurs, and the diagnosis of combined valvular lesions. Perhaps the best part of the article is that dealing with treatment, which abounds in wise and helpful suggestions and affords within comparatively small compass a critical *résumé* of the various modes of treatment, with their indications and contra-indications.

Dr. Charles F. Hoover contributes a learned discussion of the complex subject of functional disease of the heart. His classification of the cases and his review of the various explanations given of the protean manifestations of disturbed innervation of the heart are worthy of special attention. He also discusses the pathology of angina pectoris and clearly works out its relationship to other vascular crises.

The description of congenital heart disease, contributed by Dr. Maude E. Abbott, it would be difficult to praise too highly. The history, mode of production, pathological effects, symptoms, and physical signs of the various forms are discussed in detail, copious references are appended, and useful statistics are given. The article constitutes a valuable monograph on the subject. Professor Osler's articles on Diseases of the Arteries and on Aneurysm are also both deserving of special commendation. His consideration of the causes and symptoms of arterio-sclerosis is clear and illuminating, and is charmingly written. The description of the various forms of aneurysm is exhaustive and thoroughly up to date. His plea for method and care in physical examination on the text of the well-known dictum of Jenner's that "more mistakes are made by not looking than by not knowing," we should like to draw special attention to, for it is admirable. Dr. George Blumer of New Haven, Connecticut, treats of thrombosis, embolism, and phlebitis in a learned article, which affords a useful critical summary of present opinions on these conditions. The question of the occurrence of red or white infarcts is, however, not so fully or so clearly dealt with as the other aspects of the results of vascular occlusion. The diseases of the lymphatic vessels are described by Dr. Alfred S. Warthin of Ann Arbor, Michigan. The article includes descriptions of the various abnormal conditions of the thoracic duct and is worthy of note, since greater consideration is accorded to these conditions and to their diagnosis than is usual in text-books.

The second part of this volume treats of diseases of the blood and opens with an article on the General Pathology of the Blood-forming Organs and on the Main Data of Hæmatology by Dr. Richard C. Cabot of Boston, Mass., which, though short, is a very clear and useful statement of the general principles underlying the study of the blood in disease. The same author contributes the article on Pernicious and Secondary Anæmia, Chlorosis, and Leukæmia. The description of pernicious anæmia is admirable and contains an analysis of 1200 cases. Dr. Cabot states that in regard to its differentiation from secondary anæmias, his experience is that this can be effected from the blood examination in every case. His description of chlorosis, while thorough, contains less detail and the various theories as to its causation receive but scant discussion. Dr. Cabot states that this disease is rapidly diminishing in frequency in America. In regard to leukæmia, the view is strongly emphasised that the hæmapoietic system is not sharply differentiated into lymphoid and myeloid elements, but is essentially a single system, and thence is deduced the essential identity of all forms of leukæmia; for convenience of description, however, they are divided into three groups —myeloid, lymphoid, and atypical. Dr. Cabot doubts the existence of mixed forms and deprecates the manufacture of special names, such as leukanæmia, to designate certain atypical forms. Dr. Joseph H. Pratt of Harvard contributes a useful article on Purpura and Hæmophilia.

The third part is devoted to Diseases of the Spleen, Thymus, and Lymph Glands. In an article on diseases of the spleen Dr. Irving Phillips Lyon of Buffalo, New York, discusses the physiology and pathology of the spleen and describes the conditions of splenic anæmia and kala-azar. Dr. Warthin deals with diseases of the thymus and of the lymphatic glands. The features of enlargement of the thymus and its association with the conditions of thymic asthma and thymic death are exhaustively discussed.

This volume constitutes a very noteworthy addition to the list of medical works of reference and reflects great credit upon the editors and their collaborators.

Experimental Embryology. By J. W. JENKINSON, M.A., D.Sc., Lecturer in Embryology in the University of Oxford. Oxford: The Clarendon Press. London: Henry Frowde. Pp. viii.–341, with 167 figures in the text. Price 12*s.* 6*d.*

EXPERIMENTAL embryology, or, as some prefer to call it, mechanics of development, or physiology of development, is a comparatively new branch of biological science, and may be said to date from the time only a few years back when

Wilhelm Roux succeeded in producing a half-embryo from a half-blastomere. Growth and division of nucleus and of cell always accompany differentiation, but the production of a new form out of a relatively simple germ, comparatively structureless and unformed, and the gradual passage of this into a new individual which is like its parents, "that is the marvel which has excited the wonder of the observer and demands all his wit to understand and to explain."

In a short introduction to his "Review," as the author modestly terms his work, he acknowledges his indebtedness to an excellent model in the "Text-book" of Korschelt and Heider, published in 1902, and he gives both here and in a concluding chapter an interesting account of the views and speculations of Aristotle and others on the problems of development. In 1874 Professor W. His compared the various layers of the embryo of the chick to elastic plates and tubes; but Davenport recently carried the subject from the morphological side much further. The author incorporates part of the work of Davenport. His in 1874 not only sought a mechanical explanation of differentiation, but according to his principle of "germinal localisation" every spot in the blastoderm corresponds to some future organ—i.e., although the parts of the embryo cannot be said to be preformed in the germ, the materials for those parts are already there. Unequal growth produces the form of the parts, and so of the whole body. Wilhelm Roux raised this principle of His to the rank of a theory, which has been called the "Mosaik-theorie," or theory of self-differentiation.

The author proceeds to inquire what are the internal, and what the external, conditions that determine the course of development. As cell-division is the first—or almost the first—sign that a developing organism gives of its activity, he discusses what is known of those factors which determine the direction of division in general, and in particular the pattern of segmentation. There are several types of cell-division: (1) radial—e.g., that observed in sponges, echinoids; (2) spiral cleavage, as in molluscs and some worms; (3) bilateral, as in some fishes; and (4) irregular, as in turbellarians. Hertwig's experiments on the effects of compressing the eggs of frogs between plates of glass are quoted, and many others, such as those of Driesch on echinoderm eggs. It would appear that many of the patterns exhibited by eggs with a spiral cleavage are explicable by reference to the laws of surface-tension.

There is a short chapter on "Growth," after which the author comes to the external factors which affect the development of an egg, and he deals successively with the following points: 1. Gravitation. In many cases this has no effect; but there are some instances where it affects development. 2. Mechanical agitation. Pelagic ova afford instances in which this may be considered. The hen's egg requires a small amount of movement; the hen turns her eggs every day, and in artificial incubation this must be done, else, as Dareste has shown, the allantois sticks to and ruptures the yelk sac in unturned eggs. Violent agitation of a hen's egg is fatal. 3 and 4. Magnetism and light. These do not seem to exercise a directive influence generally, though certain qualities of light injuriously affect development of certain ova. 5. Heat. This, of course, is important. O. Hertwig has made a careful investigation into the conditions of temperature for the development of frogs' eggs. The normal temperature here is from 15° to 16° C., though the optimum is somewhat higher, and it is of no small importance to observe that the definitive distribution of specific substances in the unsegmented egg, and so the determination of the embryonic axes, may be brought about partly at least by the spermatozoon, from its actual point of entrance along its "penetration path."

We have said enough to show the great interest attaching to the whole problem, a problem perhaps new to many English readers. To the trained embryologist we commend, not only the material part of the work, but the keen critical dissection of the very suggestive theory of Driesch and various other theories which so largely prevail in the domain of a recent but very abstruse department of natural knowledge. Apart from the formation of "monsters" under very abnormal conditions, great interest attaches to the study of "variations," "sports," "mutations," by varying these external factors, and the problem that confronts the experimentalist is to determine the part played by each factor of the external environment.

About one half of the book is devoted to the "Internal Factors." The author begins with "The Initial Structure of the Germ as a Cause of Differentiation," and later there is a short but interesting chapter on the action of the parts of the developing organism one on another. The former is considered very elaborately, for nearly all groups of the animal kingdom are passed in review, from amphibia to cœlenterata. This is the part that is of the greatest interest to the specialist. The author gives a careful *résumé* of the conclusions and considerations to be drawn from an elaborate series of experiments, one of the most important deductions being that the cytoplasm of the undeveloped ovum is not homogeneous and "isotropic," as was suggested by E. Pflüger in 1883, but heterogeneous and "containing various specific organ-building stuffs which are definitely and necessarily connected with the production of certain parts or organs of the developing animal" (p. 240). The removal of these "stuffs" entails the absence of the corresponding organ later.

This is a thoroughly interesting book.

Injuries and Diseases of the Knee-joint considered from the Clinical Aspect. By Sir WILLIAM H. BENNETT, K.C.V.O., F.R.C.S. Eng., Consulting Surgeon to St. George's Hospital and to the Hospital of St. John and St. Elizabeth; Senior Surgeon to the Seamen's Hospital, Greenwich. With 34 illustrations. London: James Nisbet and Co., Limited. 1909. Price 4*s.* 6*d.* net.

THE largest joint in the body is extremely liable both to disease and injury, and in both cases the importance of the condition is so great as to justify the devotion of a volume to their consideration. And we know no surgeon better qualified than Sir William Bennett to write such a book, while we are glad that he has taken for discussion the varions lesions from their clinical aspect only, for by doing so he has increased the practical value of the work materially by giving it a well-defined scope.

A short description is given of the normal knee, and the importance of the ilio-tibial band is pointed out; two skiagrams, showing the joint in extension and flexion, demonstrate clearly how little protection the patella affords against wounds from the front, for in all positions of the joint a considerable area of the synovial membrane is vulnerable both above and below the patella. In the treatment of acute effusion into the joint, whether hæmorrhagic or serous, the author is opposed to the application of ice, and he quotes a case in which the application of an ice-bag to an injured knee was followed by sloughing of the skin over the patella. Ice relieves somewhat the pain in effusion, but he has come to the conclusion that hot compresses are preferred by most patients, and the local effect is better. He points out that the mere tension of an acute effusion may send the temperature up to 103° F. For this acute pain he advises gentle shampooing with a very light hand; he has found that patients, restless and irritable from pain, can be sent to sleep sometimes in a few minutes in this way. He is opposed to complete immobility in these cases of acute effusion, and as

soon as the tension begins to lessen he advises gentle movement of the joint by the patient. This gentle movement, he considers, favours absorption and prevents adhesions.

An important chapter is that on painless effusion into the knee-joint. It is by no means a rare condition, but very little about it has appeared in print. Sir William Bennett has seen it mainly in women and girls, and in most cases there has been marked menstrual or uterine trouble, and often anæmia. A slight injury to one knee may draw attention to marked effusion, but on examination it will be found that the other knee also contains fluid. The re-establishment of menstruation or the correction of the abnormality is in many of the cases followed by disappearance of the fluid. The condition may occur in boys, and Sir William Bennett thinks that here it is generally associated with phimosis or some other affection of the external genital organs, when if this be remedied recovery follows. We have not met with any such suggestion previously, but it is of great interest and importance, and it should not be difficult to obtain evidence on the point. The medical officers of schools would be in the best position to test the accuracy of the existence of such an association.

The chapters dealing with what has been called "internal derangement of the knee-joint" are of much interest. As to its frequency the author has found damage to the semilunar cartilages in nearly two-thirds of all cases of affection of the knee consequent on injury. The left knee was more than twice as frequently affected as the right. The injury done to the cartilage may vary greatly. In some cases it is merely bruised, but the consequent swelling is sufficient to prevent complete extension of the joint. Absorption may remove the blood and serum effused into the cartilage, but sometimes it is necessary to remove the swollen cartilage, as in one case detailed in the book. In other cases where a displaced cartilage has not been returned to its rightful position it tends to become sodden and felt-like, and this condition is doubtless favoured by the constant grinding pressure to which it has been subjected during movements of the joint; inflammatory processes are set up and it becomes difficult to recognise the tissue as the fibro-cartilage. Sir William Bennett points out that in recurrent displacement the following points will generally be noticed: 1. The tendency to recurrence is in direct proportion to the looseness of the knee-joint and the wasting of the muscles of the thigh. 2. With repeated attacks the effusion gradually tends, in most cases at least, to diminish in quantity with each attack until it may no longer be seen. 3. The severity of the injury necessary to produce the symptoms diminishes with successive attacks. 4. In a certain proportion of cases the occasional recurrence of effusion with a feeling of weakness is the only symptom. 5. In course of time in some cases the attacks, though frequent, may cause so little inconvenience, and the displaced cartilage is so readily reduced, that little or no disability arises. 6. If the displacement of the semilunar cartilage is into the intercondylar notch all symptoms of abnormality may disappear.

The treatment advised by the author is this: The displaced cartilage must be reduced as soon as possible, and the joint is then to be kept at rest until the effusion has gone, massage of the muscles and the knee being very useful in assisting the absorption of the fluid. This early massage also checks the rapid muscle waste. The disappearance of the effusion rarely takes more than a week and then movements may be begun, but rotation must be avoided. The massage must be continued for a period of from three weeks to six months. So long as the thigh muscles are wasted or the capsule is loose, massage must be continued. When treatment fails operation is indicated, but Sir William Bennett thinks that if the early treatment is correctly carried out operation is needed in only a small proportion of cases. The cases in which operation is clearly indicated are, firstly, those in which non-operative measures have conclusively failed; secondly, those in which general flaccidity of the joint, as shown by an abnormal amount of lateral movement upon manipulation, is in excess of the other symptoms; and, thirdly, those in which a speedy cure is urgently called for by special circumstances. The incision preferred by the author is longitudinal, commencing above about half an inch from the edge of the patella at its centre and extending downwards to a little beyond the line of the articulation, and he maintains that this incision gives ample room for every purpose. He lays great stress on the importance of never operating while there is fluid in the joint.

We have examined particularly this section of the work, as it is one which is of special interest at the present time, for more attention is now being paid to abnormalities of the fibro-cartilages of the knee than hitherto, as it is being recognised that many obscure pains in the knee are associated with slight injuries of the cartilages. In the remaining chapters of the volume, we may say that we have been impressed by the evidence of Sir William Bennett's intimate acquaintance with his subject, so that we feel sure that the book will be valuable to all who have to deal with injuries or diseases of the knee-joint, both to general practitioners and to those who are operating surgeons. The wide experience of the author supplies principles and details from which all may derive benefit. The book contains many illustrations, including a number of skiagrams which help to make its reading and comprehension easy.

Manuel de Thérapeutique Clinique des Maladies Tropicales. Par le Dr. A. GUILLON, Medecin-Major de 2e Classe des Troupes Coloniales; Professeur-adjoint à l'École d'Application du Service de Santé des Troupes Coloniales. With illustrations in the text. Paris: Octave Doin et Fils. 1909. Pp. 387. Price 7 francs.

THIS work on the treatment of tropical diseases is written by a French military medical officer for practitioners on land or sea in tropical regions, more especially for those living in isolated places where books of reference are not available. It forms a very compact and practical text-book, omitting historical and bibliographical reference, but embodying very full therapeutical and other treatment; and, what is more important, it furnishes prescriptions recommended by recognised authorities on the treatment of tropical diseases, amongst whom we note the names of Sir Patrick Manson and several officers of the Royal Army Medical Corps and Indian Medical Service. The first chapter covers Asiatic cholera, yellow fever, and plague. The Roux-Yersin serum, as employed in the French colonies, is recommended for the treatment of the last-named disease. In the section dealing with the treatment of dysentery the advisability of the surgical treatment of very chronic forms of the disease is well described, and the establishment of an artificial anus at the level of the cæcum is recommended to allow the large intestine to obtain rest and to be washed out. Manson's treatment on the same lines is mentioned. The treatment of tropical liver abscess is also well described. Kala-azar, a disease in which considerable interest has been aroused recently, is well, though somewhat briefly, described. Its geographical distribution is laid down as covering India, China, and Tunis. Experimental treatment by atoxyl in large doses is recommended, and from the fact that the Tunisian parasite has been found in dogs the possibility of a curative serum derived from this source is suggested. The treatment of tropical skin diseases is fully described. We notice the application of balsam of Peru in the treatment of

itch is regarded as an efficacious one, and a complimentary reference is made by the author to the officers of the Royal Army Medical Corps who introduced this specific treatment. The treatment of the two forms of bilharzia disease, intestinal and urinary, deserves mention, as well as the sections dealing with bites of snakes, scorpions, and poisonous insects. Ptomaine poisoning from eating poisonous meats, fish, and vegetables is very fully described and suitable lines of treatment laid down. Beri-beri, elephantiasis, sunstroke, heat-stroke, and other pathological conditions met in the tropics, are embodied in the concluding chapters.

The book can be recommended confidently to medical men practising in the tropics.

LIBRARY TABLE.

Suture of Arteries, an Experimental Research. By E. ARCHIBALD SMITH, M.B., Ch.B. Vict., F.R.C.S. Eng. London: Henry Frowde and Hodder and Stoughton. 1909. Pp. 70. Price 2*s.* 6*d.*—The suture of arteries is assuming an important position in surgery, for on its performance depends the practicability of some of the most recent suggestions in plastic surgery, such as the transplantation of organs. Even in mere wounds of vessels it is not without great value, for to be able to suture a wounded artery would greatly diminish the risk of gangrene of a limb. It is not without interest to note that the first successful attempt to suture an artery was made exactly 150 years ago, for in 1759 Lambert of Newcastle devised, and Hallowell put into practice, the suture of an artery which had become the seat of a traumatic aneurysm. The idea was revived by Gluck in 1881 and many experiments have been made since, with more or less success. The cases in which arterial suture has been performed in man are few; in 1903 Jensen was able to collect eight cases, and Mr. E. A. Smith has added 12 others. This little book contains an account of a number of experiments on animals performed in Vienna with the view of discovering the most suitable form of arterial suture. Mr. Smith goes through the methods hitherto employed, and then describes that which he himself considers to be best. This is a form of quilled suture, in which a small piece of catgut takes the place of the quill. For a longitudinal wound of a vessel this suffices, and it is also suitable for end-to-end suture, in all cases the edges of the wound being turned outwards so as to bring intima into contact with intima. For longitudinal wounds it might be thought that some narrowing of the vessel at the site of the suture might occur, but we are told that in practice this is barely noticeable, and Mr. Smith thinks that the narrowing is not permanent. For the more easy practice of this method of suture he has devised several ingenious instruments. The special merit of this form of quill suture is that it shows little or no tendency to cut out. The author holds that if an artery be carefully sutured there is a *restitutio ad integrum*, for new elastic and muscle fibres form in the scar and it is lined internally by normal endothelium. A chapter on the histology of the cases is given, and the list of references to papers on the subject should prove useful to future investigators.

Aids to Medicine. By BERNARD HUDSON, M.D. Camb., M.R.C.P. Lond., Assistant Physician to the City Road Chest Hospital; Pathologist and Registrar to the East London Children's Hospital; late Casualty Physician to St. Bartholomew's Hospital. London: Baillière, Tindall, and Cox. 1909. Pp. 252. Price, cloth, 3*s.* net; paper, 2*s.* 6*d.* net.—The object of this little handbook is to supply the student with a book for revision purposes of a convenient size to carry in his pocket, and, as stated by the author, it is not in the least degree intended to serve as a substitute for any of the many excellent text-books on medicine. It is an admirable little "cram" book, and as such books appear to be an unavoidable feature of modern medical education, this one may be recommended, for it may well prove useful to fortify students' memories just before they are to be tested by final examinations in medicine. The type is good, there is a good index, and practically the whole of modern medicine is well and concisely covered.

A Practical Course of General Physiology for Medical Students. By D. NOEL PATON, M.D. Edin., F.R.C.P. Edin., Professor of Physiology, University of Glasgow; and G. HERBERT CLARK, M.B. Glasg., D.P.H. Edin., Muirhead Demonstrator of Physiology, University of Glasgow. Glasgow: James Maclehose and Sons. 1908. Pp. 39. Price 1*s.* net.—In order to encourage accurate observation and correct interpretation of the results obtained by simple physiological investigation, the authors have prepared a syllabus giving directions for the performance of a series of experiments to illustrate the chief properties of living tissues without indicating the results likely to be obtained. It is directed that the experiments shall be carried out before the student attends lectures on the subjects he is working at. The book is interleaved to enable him to record his results, and the directions given are full, clear, and sufficient. The subjects to be worked at include the properties of protoplasm, muscle, nerve, reflex actions, the senses, the circulation, and respiration. The idea is a good one, and it should serve to render the course of practical physiology a more useful training than where the student strives after an expected result.

Arterio-sclerosis: Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis, and Treatment. By LOUIS M. WARFIELD, A.B., M.D. With an introduction by W. S. THAYER, M.D. With eight original illustrations. St. Louis, Mo.: C. V. Mosby Medical Book Co. 1908. Pp. 165.—The condition of arterio-sclerosis, although in the strict sense a pathological condition of the blood-vessels, with a varied etiology and a complex symptomatology depending largely upon the distribution and degree of its incidence, is described by the author as a clinical entity. He lays stress upon the frequency of the occurrence of early arterial degeneration and its association with the conditions of hard work, worry, and high living. Without being discursive he gives a general account of the condition and of its clinical manifestations in clear and simple language. Treatment is discussed in some detail, and especial emphasis is laid upon the importance of early recognition and of the carrying-out of measures to prevent the advance of the pathological process. Dr. Warfield would like to see men and women past the age of 40 submit themselves to a routine medical examination twice a year in order to find out if they are in sound health. Such a proceeding, if generally adopted, would no doubt serve the useful purpose of drawing attention to the importance of care in regard to their mode of life in many persons who, without apparently suffering, overtax their powers, and who eventually come for treatment only when irreparable damage has been done.

JOURNALS AND MAGAZINES.

The Edinburgh Medical Journal.—In the May issue Dr. Byrom Bramwell discusses the teaching of medicine at Edinburgh and points out the existence there of the malady from which London is equally suffering—the multiplication of lectures and consequent lack of time for clinical observation. He even suggests the abolition of so-called clinical lectures, which are seldom instances of really valuable clinical teaching. Mr. A. Logan Turner writes on orbital complications of suppuration in the frontal and ethmoidal sinuses; and articles dealing with renal decapsulation as a treatment of puerperal eclampsia are contributed by Sir J. Halliday

Croom, Dr. R. C. Buist, and Dr. H. Oliphant Nicholson. Notes of cases of removal of foreign bodies, intentionally swallowed, from the alimentary canal are recorded by Mr. J. Hogarth Pringle and Mr. Alexis Thomson.

The Dublin Journal of Medical Science.—An interesting paper on atrophy of the testicle, written by Dr. Charles Greene Cumston, is published in the May number of this magazine. Mr. F. Kennedy Cahill discusses the causes of the collection of gas in the stomach and the treatment to be adopted in different forms of the disorder, and Mr. W. I. de C. Wheeler writes on local anæsthesia in minor surgery and its relation to reactionary pain. Dr. W. R. Dawson considers the Irish recommendations of the Royal Commission on the Care and Control of the Feeble-Minded.

The Birmingham Medical Review.—The existence of apparently healthy persons who yet act as "typhoid-carriers" and spread the infection of this disease has been much discussed recently, and any light that can be thrown on the question is of value. In the March issue of this journal Dr. J. Miller discusses some recent investigations on this subject and records a case of his own in which the bacilli were found, not only in the gall-bladder, but also in a necrotic area of the liver. It would appear that infection of the bile-passages is effected through the blood stream. In the same number Dr. W. A. Potts discusses the causes which lead to the birth of feeble-minded children, among which maternal intoxication, either by alcohol or infective diseases, appears to be pre-eminent.

ERRATUM.—In our review of the collected papers of Lord Lister which appeared in THE LANCET of June 5th, p. 1603, the price of the book, owing to a slip on the part of the reviewer, was given as "£2 2*s.* each volume." It should have been £2 2*s.* net the set.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

TUESDAY, JUNE 1ST.

THE General Medical Council resumed its sittings to-day at the offices of the Council, 299, Oxford-street, W. The President, Sir DONALD MACALISTER, occupied the chair.

Dental Surgery Licences.

The Dental Education and Examination Committee submitted the following report:—

A letter has been received from an educational body, the Incorporated Dental Hospital of Ireland, calling attention to a certain difference existing between the requirements of the several bodies granting licences in dental surgery. The recommendation of the General Medical Council, which is to be found in the regulations for the registration of medical and dental students, 1903, p. 18, is: "One year *bonâ-fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional study." It appears that the Royal College of Surgeons of England allows two years of such study to be counted towards the four years of the curriculum, but that the other licensing bodies only allow one year to be so counted. As from the printed regulations the actual practice of some of the bodies is not obvious, inquiries have been made by the Registrar and answer received. The regulation (2) of the Royal College of Surgeons is "of having been engaged during a period of not less than two years, in acquiring a practical familiarity with the details of mechanical dentistry under the instruction of a competent practitioner, or under the superintendence of the mechanical department of a recognised dental hospital, where the arrangements for teaching mechanical dentistry are satisfactory to the Board of Examiners in Dental Surgery."

Mr. HENRY MORRIS referred to the recommendation of the General Medical Council—namely, that "one year *bonâ-fide* apprenticeship with a registered dental practitioner, after being registered as a dental student, may be counted as one of the four years of professional study." If only one year of professional study might be counted, then the curriculum became a five years' curriculum or else the period passed in a dental hospital had three years allotted to its final stages, which was one year longer than was required. It is allowed by those who are best acquainted with the actual practical work that two years for general and surgical subjects are sufficient, but that two years are required at least for education in mechanical dentistry. The requirements of the General Medical Council are that there should be two years at least of training in mechanical dentistry and that there should be a four years' curriculum, thus requiring that either the whole of the two years of training in mechanical dentistry must be passed in a dental hospital or else that the curriculum becomes one of five years. The Royal College of Surgeons of England are convinced that the education in mechanical dentistry which students got under a proper director in the hospital was infinitely superior to that which they got as apprentices of dental practitioners throughout the country. The aim and object of the College was by degrees to make the whole period four years, including two in mechanical dentistry to be passed under the direction of the hospital. That was the reason why in 1906 they changed the requirement of three years' practice in mechanical dentistry to two years, because they hoped if it was reduced to two years those two years would be passed in a dental hospital. And that is really the tendency at the present time. But the time has not arrived when that can be done, for the reason that there is not provided in all places where dentistry is taught in this country sufficient laboratory accommodation for the education in mechanical dentistry for all students who are training. The hope of the Royal College of Surgeons is to get the two years included within the four years' curriculum because more than two years for general work are not required.

The report was adopted.

Mr. MORRIS moved—

That the report of the Dental Examination Committee be communicated to the Royal College of Surgeons of England with such observations as it may be desired to offer.

Sir CHARLES BALL seconded.

The motion was agreed to.

Penal Cases.

The Council resumed consideration of a charge against Robert Galbraith Reid, registered as of 202, Ewell-road, Surbiton, M.B., Mast. Surg. 1887, Univ. Glasg., who appeared before the Council in answer to a summons.

The Council came to the conclusion that the facts alleged in the notice of inquiry had not been proved.

Report of the Education Committee.

The next business was to receive a report from the Education Committee on various proposals submitted to it referring to the curriculum in medicine. At the suggestion of Dr. NORMAN MOORE an understanding was come to to defer the discussion of the details of the report until the November session, when it would be given a foremost place in the programme of business.

Dr. MACKAY, the chairman of the Education Committee, then moved that the report should be entered in the minutes.

Mr. THOMSON moved as an amendment that the report should also be circulated to the licensing bodies for their information.

Mr. MORRIS, in seconding the amendment, remarked that it would be well if the licensing bodies considered the report before the Council came to a final decision.

Dr. MACKAY replied that if the Council were proposing a very drastic change in the Regulations and were not sure of opinion on the matter it might well go to the licensing bodies for suggestions. However, it was now proposed to add to the recommendations and not to the requirements of the Council. All the facts and figures had been before the bodies.

The amendment was rejected on a show of hands.

The motion that the report should be entered in the minutes was agreed to.

The report deals with various proposals submitted to the committee for consideration. In it it is stated that the committee does not recommend the exclusion of chemistry, physics, and biology from the curriculum of medical studies and their transfer to a preliminary stage. Further, the committee does not recommend at the present the addition of a year to the curriculum in medicine.

In a concluding portion of the report the following passage appears:—

The committee believe that a period equivalent at least in time value to 27 months of undivided study should be allotted to the subjects for the Final Examination, half value being granted to periods of overlapping study. With the majority of the licensing bodies the last two years of the curriculum contain only 21 months. This being allowed for, it will be seen that the proposal implies that in cases where there is no overlapping the undivided study of the Final subjects must be begun, when the minimal course is to be followed, in the middle of the third year. In many of the licensing bodies the completion of the examination of the first period does not take place until this point has been reached. It is, however, the practice among these bodies to commence the work for the Final Examination at the beginning of the third year. In the cases referred to, the student, when no hindrance takes place, completes his course in 57 months, and, on the principle of allowing half-value for overlapping study, out of this total devotes the equivalent of 30 months' study to the Final subjects, and 27 months to those of the First Period.

When the work for the Final Examination begins at the commencement of the third year a delay of six months in the completion of the First Period Examination may be compensated for according to the principles involved in the proposal, but any further delay will necessitate an addition to the Final portion of the curriculum. The subjoined table sets forth the details of the scheme:—

Date of commencement of work for final examination.	Date of completion of examination in anatomy and physiology.	Length of period of study for final examination. Months.				Total length of curriculum.
		Overlapping study.	Undivided study.	Total.	Equivalent value of total.	
	Months.					Months.
Beginning of third year.	30	6	27	33	30	57
" " "	36	12	21	33	27	57
" " "	42	18	18	36	27	60
" " "	48	24	15	39	27	63
Middle of third year.	30	—	27	27	27	57
" " "	36	6	24	30	27	60
" " "	42	12	21	33	27	63
" " "	48	18	18	36	27	66
Beginning of fourth year.	36	—	27	27	27	63
" " "	42	6	24	30	27	66
" " "	48	12	21	33	27	69

It is obvious, however, that if the work for the Final Examination be commenced in the course of the second year of the curriculum the penalty for delay in passing the First Period Examination might be avoided in whole or in part. The institution of a minimal time-value limit for the second period necessitates the taking of a similar action in regard to the first period. The natural course would be to recommend in the case of the first period subjects a minimum limit of study equivalent in value to 24 months of undivided study. There is, however, a difficulty in the way of taking this step, because, in the case of certain of the licensing bodies, those which recognise school study in the preliminary sciences before the commencement of the medical curriculum, some of the students complete the examination in anatomy and physiology in a period of 18 months from the beginning of professional study. The difficulty may be met practically by adding to the original recommendation a rider to the effect that final study earlier than the third year of the curriculum shall not be taken into account in reckoning the time-value of the final period.

It will be generally conceded that, apart from overlapping study, some period of actual undivided study should be safeguarded for the subjects of the Final Examination. It is important that it should be made possible for the student to devote the last full year of the course entirely to clinical work, and for this end, taking into account the incidence of the autumn vacation, it may be suggested that a minimum period of 15 months of undivided study should be required for the Final subjects. By many, however, this will be regarded as insufficient, and it would not be an unreasonable position to take to hold that the recognition of overlapping study should be confined entirely to the intermediate portion of the curriculum, and that 21 months of undivided study should be demanded as a minimum for the Final Examination. If this proposition be adopted it will not be necessary to make any regulation regarding final study in the earlier portion of the course. While recognising that there is much to be said on both sides, the committee, looking to the relative importance of the final work, recommend to the Council the adoption of the latter proposal.

The committee accordingly advise that the following be added to the "Recommendations of the Council in regard to Professional Education":—

"For the purposes of this Recommendation the subjects of the curriculum are arranged in two groups, the earlier group comprising the preliminary sciences and anatomy and physiology, the later group embracing all the remaining subjects, exclusive of pharmacy.

The Regulations of the bodies should be so framed as to secure (1) for the study of the later group the reservation of a period equivalent in value to 2½ academic years (27 months) of undivided study, half time-value being allowed for periods of work in which studies in the earlier and later groups overlap; and (2) the reservation of a period of two academic years (21 months), in which the studies of the later group shall have the undivided attention of the student."

Reappointment of Registrar.

Mr. H. E. ALLEN was appointed Registrar.

Vote of Thanks.

On the motion of Dr. NORMAN MOORE a vote of thanks was awarded to the President for his services in the chair.

The summer session then came to an end, the Council adjourning until November.

MEDICINE AND THE LAW.

Fergusson v. *the Malvern Urban District Council.*

IN THE LANCET of Feb. 15th, 1908, p. 517, we congratulated Dr. J. C. Fergusson upon the recovery of damages against the Malvern urban district council in respect of the pollution of water used at the hydropathic establishment conducted by him, which caused an outbreak of enteric fever among its inmates. At the same time we indicated certain points upon which there had been findings of fact by the jury, and as to the legal bearing of which argument in the Court of Appeal was likely to follow. The jury found that the defendants, the Malvern district council, were guilty of negligence in permitting sewage to escape from their sewer and to contaminate certain water which the plaintiff made use of for his establishment, and they also found definitely that this contamination of water by sewage was the cause of the outbreak of fever, and not, as was suggested, defects in the plaintiff's drains. The first two questions put to the jury were, however, (1) Had the plaintiff any proprietary right in the water flowing from the Tudor well to his tank?—to which the answer was in the negative; and (2) Had the plaintiff any licence from the owner to use the said water? To this also the answer "No" was returned, and it must be added that all the questions thus put were agreed between the counsel for the parties as embodying the issues of fact at stake. In these circumstances it will readily be seen that the legal right to compensation claimed by Dr. Fergusson was open to grave doubt. The water was polluted by sewage through negligence on the part of the defendants, but they did not supply him with it for drinking or for any other purposes, and they were not aware that he was taking it. In the terms of the questions and answers quoted he had no proprietary right in the water, and those who had such right had given him no licence to use it. The Court of Appeal decided that the findings in question were fatal to the plaintiff's case and deprived him of the judgment obtained at the trial, summarising the point as to the mutual position of the parties in a decision which has now been upheld by the House of Lords. In giving judgment on May 23rd the Lord Chancellor said that the real question was whether there was a lawful enjoyment of the water by the plaintiff; that the jury had negatived any such enjoyment; and that strict justice had been done by the judgment of the Court of Appeal. Lord Macnaghten concurred. Lord James of Hereford referred to the damage undoubtedly suffered by the plaintiff, but did not consider that he had any chance of establishing his case on a new trial. Lord Shaw was equally unable to say that there should be a new trial, although he expressed some doubt as to whether the question of the lawful enjoyment of the water had been clearly put to the jury. It is to be regretted that Dr. Fergusson, in addition to the grave losses already sustained by him, should have to bear the heavy cost of unsuccessful and protracted litigation.

THE CAMBRIDGE SCIENTIFIC INSTRUMENT COMPANY.—In THE LANCET of May 15th (p. 1427) we described briefly Einthoven's string galvanometer, which was exhibited by Professor A. D. Waller at the recent conversazione of the Royal Society, and in our issue next following (p. 1448) we published a paper by Professor Waller describing Einthoven's recent electro-cardiographic researches. Physiologists and others should know that the very delicate string galvanometer which forms the chief part of Einthoven's apparatus is being made in this country by the Cambridge Scientific Instrument Company, Cambridge.

THE LANCET.

LONDON: SATURDAY, JUNE 12, 1909.

National Control over the Purity of Foods.

AT the International Congress of Applied Chemistry, which concluded its multifarious activities last week, a useful series of papers on chemical and technical questions relating to the purity of food were contributed to the section which went by the hitherto unfamiliar term of "Bromatology." The section devoted two meetings to a discussion on National Methods of Food Control, and another to Food Standards. Dr. W. H. WILEY gave an interesting and characteristic address on the origin and progress of the "pure food" movement in the United States, in which he has played so prominent and distinguished a part. Dr. EUGÈNE ROUX and Dr. F. BORDAS described the important administrative organisation for the repression of fraud and falsification in articles of food, which is rapidly being developed in France under their direction as a result of the legislation of 1905; and Dr. A. MCGILL showed the progress made in the same direction in Canada by methods which are based partly on American and partly on British experience. Dr. WYSMAN and Dr. VAN RHYN expounded the system in Holland, by which trading associations and the State work together in a system of supervision over the production of unadulterated butter and other articles. Dr. G. S. BUCHANAN undertook the task of summarising British legislation and administrative methods, while the Italian, Belgian, and Swiss organisations for controlling the purity of food were also explained by representatives of these countries.

As might be expected in a discussion from the point of view of applied chemistry, attention was chiefly directed to two of the many ramifications of the question of "pure food"; viz., the protecting of the consumer against the introduction into foodstuffs of deleterious or poisonous substances, and the providing of him with security that the article which he buys corresponds within reasonable limits to the description given of it. The earlier attacks on food adulteration were naturally concentrated to a large extent on the first of these questions. It was then found that dangerous substances were being employed which could readily be detected by the analyst and which no one could be found openly to defend: red lead in pepper, Scheele's green in sweets, and many other examples could be given. In this country the Sale of Food and Drugs Act of 1875, with its machinery of sampling and public analysis, practically put an end to such practices, and we owe it to the efforts of WAKLEY, HASSALL, and other reformers of the period that England took a lead among nations in this respect. The questions which demand attention at the present time are considerably more complicated, and in dealing with them administrative and economic considerations become at least as important as the determinations of the analyst. The case of preservatives is a familiar example of the complexity of the matter where the introduction into foods of potentially injurious substances is concerned. All countries are not at present prepared to adopt Dr. WILEY'S view that any preservative substance, other than traditional articles like salt and wood smoke, ought to be entirely prohibited in every food. They are disposed rather to compromises which admit certain specified preservatives in particular cases under strict regulations, while excluding them in instances where no sufficient commercial necessity for their employment can be shown, and no compensating advantage would be gained by the public if their use is permitted. The complexity of pure food "control" is even more strongly illustrated by discussions on means for preventing inferior substitutions and "imitation" articles being passed on to the public as "genuine" products. The difficulties which are met with in obtaining uniform action in this matter are well known to those who have experience of the working of the English Sale of Food and Drugs Acts. The discussion at the Congress showed that in our colonies and in foreign countries the same difficulties are being actively met by the prescription of "pure food standards" and definitions of genuine products, and by measures which supplement or supersede a system of control, based on analysis of samples sold by retail. These form a systematic check over the proceedings of the food manufacturer or importer, and so fix in the right quarter the responsibility for the description which is given to the article sold. In France this is being done for special classes of foods by a series of administrative regulations made under the recent pure food law of that country. In such cases, for example, as the sale of pure olive oil and of mixtures of olive oil and cotton-seed oil, or of Cognac brandy and mixtures of Cognac with other spirits, the regulations leave no doubt as to the obligations of the trader at every stage, and are enforced by a special service which has the aid not only of chemical research but also of trade experts. We are glad to note that there seemed to be a general agreement among English speakers in favour of centralised action in similar directions in the United Kingdom. It would no doubt involve an addition to the benevolent bureaucracy of Government departments of which Mr. JOHN BURNS has lately spoken with so much approval, but after all if questions such as these are required to be settled they are essentially questions for the bureaucrat, provided he obtains the best expert advice and hears all sides. The Local Government Board has lately usefully exercised its "bureaucratic" powers by supplementing the action of local authorities under the Public Health Acts by special regulations relating to imported foods, and it seems very desirable that the same kind of proceeding should be followed in connexion with local administration of the Adulteration Acts.

Many of the subjects which were reviewed at the discussion referred to had, of course, little direct medical interest. People need not be poisoned when they eat articles

sold to them as chocolate which are practically innocent of any acquaintance with the cocoa bean, raspberry jam which is largely apple pulp, brandy which is three parts grain spirit, or vinegar which is mainly a solution of commercial acetic acid. The inferior article is often deficient in food value or in flavour, but the harm done to the consumer in many cases is principally that he is induced to pay more than the imitation article is worth on the strength of the reputation which the genuine article enjoys, while the maker of the latter often becomes driven by the competition of the inferior product to debasing the quality of the higher-class material. The fair position in cases of this kind seems to be that which has been elaborated in our butter and margarine legislation. Here are two products of different origin, one the "natural" and the other the "imitation," which may be practically indistinguishable to the ordinary purchaser, and between which there is usually little to choose in regard to wholesomeness or nutrient value. They are, however, required to be distinguished as separate articles of commerce, and as a result the imitation article has improved in quality and has a large and legitimate sale at a price which is certainly cheaper than would be the case if the distinction had not been insisted on by law and margarines had been allowed to compete with butter under the same or a similar name. The adoption of this principle has been to the advantage of the purchasing public, and particularly to the poorest members of the community, and in a broad sense is to the advantage of public health. It deserves to be remembered, however, that butter and margarine legislation in this country was largely brought about by the determination of the traders affected to act together in their own interests. This consideration is sometimes lost sight of by manufacturers of other foods, who are aggrieved by what they consider to be the malpractices of their competitors, and complain of the inadequacy of the law and the inactivity of public authorities. A particularly instructive part of the discussion was that which showed the active coöperation which takes place in some foreign and colonial administrations between the authorities and certain associations of traders, which are willing to help themselves in controlling and maintaining the purity of the foods which they prepare.

Syphilitic Diseases of the Nervous System and the Biological Syphilis Reaction.

THE differential diagnosis of diseases of the nervous system often presents problems of great complexity, and long experience is required in order to arrive at correct conclusions. The etiological factor frequently suggests certain lesions, the correctness of the inference being proved by further investigation. One of the most important causes of organic diseases of the nervous system is syphilis, and the treatment adopted may naturally be based on the knowledge that a patient has previously suffered from that malady. It is possible, however, to lay too much stress on a history of a former venereal disease. We publish in this issue an abstract of an address on the Diagnosis of Syphilitic Diseases of the Nervous System delivered by Dr. F. W. MOTT at the clinical and pathological section of the Birmingham Branch of the British Medical Association in which attention is drawn in a forcible manner to this matter. He points out that in such a widespread disease as syphilis coincidence as well as cause is of very frequent occurrence. Therefore, as he says, in making a diagnosis the question has to be determined whether the fact that the patient has had syphilis, or even presents at the time of examination signs of active syphilitic lesions, is a coincidence, or whether it bears a direct or indirect causal relationship to the nervous symptoms of which he complains. This, however, is a problem that in many cases can only be solved by ascertaining the result of antisyphilitic treatment. Again, granting that syphilis is a causal agent, the date of the primary infection will have to be ascertained, for the line of treatment to be adopted will largely depend upon the time that has elapsed since the specific sore appeared. Dr. MOTT gives as an example diffuse cerebral syphilis which occurs within four years of infection. The early diagnosis of this condition is of the most vital importance, for it is amenable to antisyphilitic treatment which if adopted in the early stages arrests or ameliorates the disease, while occasionally, though rarely, a cure may be hoped for. On the other hand, general paralysis, although of syphilitic origin, does not as a rule appear until ten years after infection, and is then not responsive to antisyphilitic remedies.

The remark that correct diagnosis is essential for satisfactory treatment is a platitude which applies to all branches of medicine. When the treatment largely depends upon one particular factor, such as the causal agent of the disease, every resource possible must be adopted in order to attempt to elicit the exact state of affairs. A progression of symptoms and an assemblage of signs frequently enable a correct judgment to be formed, but in many circumstances other methods have to be employed, chemistry and the recent developments of bacteriology holding the chief places amongst such auxiliary weapons. To be enabled to determine a syphilitic taint with certainty is obviously of prime importance, and the recent researches on the serum diagnosis of syphilis, or as it is sometimes termed the Wassermann reaction, have aroused much attention, and numerous observers have recorded their results. In THE LANCET of May 29th we published four papers on this subject written respectively by Dr. ALEXANDER FLEMING, from the Laboratory of the Inoculation Department of St. Mary's Hospital; Dr. JAMES M'INTOSH, from the Bacteriological Laboratory of the London Hospital; Dr. C. H. BROWNING and Dr. IVY MCKENZIE, of the University of Glasgow; and Mr. H. W. BAYLY, from the Bacteriological Laboratory of St. George's Hospital. In addition, we published an article on Auto-inoculation and Reinfection of Syphilis by Mr. J. HUTCHINSON. These papers form a mass of much valuable original work and tend to place upon a sound foundation a means of diagnosis which cannot but prove of the greatest assistance to the ordinary methods. Dr. MOTT, in discussing various conditions which might be mistaken for those caused by syphilis, indicates the worth of the Wassermann reaction and also of the microscopic examination of the cerebro-spinal fluid. He likewise gives a description of the technique of the reaction, and therein lies one of its

disadvantages—the test can only be performed by an expert worker in a well-found laboratory. Not only are the details of the method very complex, but as originally described the specific material was obtained from the liver of a syphilitic fœtus, which is obviously not always easy to procure. In order to be of general application, therefore, it is necessary that the test should if possible be simplified. A perusal of the contributions we have mentioned will show that to some extent this has already been accomplished. WASSERMANN believed that the reaction was a specific one which could only be brought about by using an extract of a syphilitic organ. It was subsequently demonstrated by LEVADITI and others that it was unnecessary to procure a syphilitic extract, as the reaction could be obtained by extracts from normal livers and hearts and many other tissues and organs. Then LANDSTEINER proved that the substances on which the test depends were of the nature of lipoids and were soluble in alcohol, so that alcoholic extracts of various organs could be well adapted for the purpose. Further, as originally performed, it was thought necessary to immunise an animal against the blood corpuscles of some other animal, such as by injecting the blood corpuscles of an ox into the circulation of a rabbit, whereby the blood serum of the rabbit became hæmolytic to the blood corpuscles of the ox by virtue of the presence in the serum of an immune body plus the normal complement. The normal complement was removed from the serum, after withdrawal from the rabbit, by heat and there was thus left in the rabbit's serum the immune body, which by itself would not dissolve the red corpuscles of the ox. The addition, however, of a small amount of guinea-pig's serum which contained complement at once restored the hæmolytic properties. This complicated procedure was somewhat simplified by BAUER, who took advantage of the fact that there exists in normal human serum a hæmolytic amboceptor for sheep's corpuscles, which did away with the use of the hæmolytic rabbit's serum, still, however, requiring guinea-pigs' blood as complement. HECHT proceeded further and employed the natural hæmolytic amboceptor for sheeps' corpuscles present in human serum, and also as his complement that present in fresh human serum. As Dr. FLEMING points out, HECHT made the serum to be tested supply the complement as well as the hæmolytic amboceptor. Dr. FLEMING, taking advantage of these observations, has perfected a technique which is more simple and better suited to clinical requirements. For a description of his process we must refer our readers to his paper, as the details are too long to reproduce here, but his method appears to us to be an advance on previous procedures.

The general adoption of the biological syphilis reaction will doubtless prove of great practical value in the diagnosis of diseases of the nervous system of doubtful origin. The conclusions already arrived at are suggestive and instructive, and further investigations will enable physicians to derive valuable information from the results obtained by their co-workers in the laboratory. As with other biological and bacteriological tests, although a marked positive reaction is of value—in the present instance it is a certain sign of a syphilitic infection—a negative result does not always indicate that no infection exists or has existed. It is singular that in primary syphilis the reaction may fail to appear. If a positive reaction has been obtained the indication naturally is that energetic antisyphilitic treatment should be at once adopted. Dr. M'INTOSH believes that sufficient experience has not yet been obtained in order either to give a definite opinion as to the influence of treatment on the reaction, or to say to what extent the reaction can be used to indicate whether sufficient treatment has been given or not, for the results obtained seem to differ in almost every case. Further investigation, then, is necessary before the amount of reliance which can be placed on the test can be correctly estimated, but the information already obtained designates the method as bearing the same important relationship to doubtful cases of nervous diseases that bacteriological tests do to tuberculosis.

Chronic Intestinal Stasis.

AT the meetings of the American Surgical Association and of the American Medical Association now being held in America two important papers have been read by Mr. W. ARBUTHNOT LANE. One of these—on the interesting subject of "The Operative Treatment of Fractures"—was read before the Medical Association and will be found published on another page of the present issue. The second, which was read before the Surgical Association, dealt with the operative treatment of chronic intestinal stasis, a condition which had not been treated by operation by anyone before Mr. LANE undertook its surgical treatment. The attention of surgeons of other countries has now been directed to his methods, and some of them have followed his example, and we summarise here his views and practice. The importance of chronic intestinal stasis runs little risk of being exaggerated. All who have studied and written on this subject freely acknowledge that the accumulation in the bowel of fæcal material is productive of most serious results, both immediate and distant, and that it deserves the careful attention and treatment of the physician, but it is only within recent years that the suggestion has been made that operative measures should be undertaken for its relief. That the large intestine is of less value than at first sight might appear is now acknowledged by many. METCHNIKOFF has suggested that to the presence of the large intestine is due much of that chronic poisoning of the whole body which hastens the onset of old age or, indeed, which may be looked upon as old age itself. To it he ascribes most, if not all, of the degenerative processes which are characteristic of old age, for on them depends that loss of elasticity of the several tissues which is its main quality. It must be acknowledged that these opinions have not met with complete acceptance by all, but nearly all agree that they are founded on a definite basis of fact. Quite independently of the work accomplished by METCHNIKOFF, Mr. LANE has been led to adopt very similar views, and he has had the courage to follow the leading afforded by the natural deductions. He had noticed both at operations and in the post-mortem room that in cases characterised by persistent and intractable constipation numerous adhesions exist within the abdomen, accompanied by malposition

and displacement of the abdominal contents, so that the displaced organs become fixed in their new situations; and from these observations he was led to conclude that the obstinate constipation existing in these cases was directly connected with the displacement of the viscera. He showed that the displacement of these organs, especially of the several parts of the large bowel, produced kinking at the flexures, with the result that the contents experience considerable difficulty in passing through the narrowed portions, while the accumulation of the fæces between the flexures led to dilatation of those portions of the bowel, and by the sagging thus occasioned intensified the sharpness of the constrictions. In this way would be produced a condition of chronic fæcal accumulation but little amenable to most, if not all, of the ordinary medicinal methods of treatment. On a bowel such as this most of the purgatives contained in the Pharmacopœia would have little effect, and what small effect they might produce would last but a short time and perhaps be followed by even more troublesome constipation.

This is the condition of affairs looked at from the point of view of the peristalsis of the bowel, but its true importance is only fully recognised when we consider the effect produced by the absorption of the poisonous constituents of the intestinal contents. The true function of the large intestine is the absorption of water from the fæces. For many years the absorbent power of the large bowel was under-estimated; although nutrient enemata were regularly administered most physicians were more than a little doubtful if any large proportion of the constituents of these enemata was absorbed by the rectum. But careful observation of recent years has shown that the power of absorption possessed by the large intestine is very great; the quantity of fluid which can be absorbed by it is measurable by pints in the day. This power of absorption being acknowledged, it is practically inconceivable that, with the water which is taken up from the bowel, there should not also be absorbed many soluble substances. Now it is certain that the decomposition products existing in the large intestine are many and their quantity great. In health the short duration of the stay of the contents within the large intestine is sufficient to prevent any more than a moderate amount of absorption of these toxic products. But if for any cause the passage of the fæcal material through the bowel is delayed the amount of toxic products absorbed must be greatly increased. In civilised life there are several factors which tend to diminish the rapidity of the onward progress of the contents of the large bowel, and chief among these is probably to be put the long continuance of the erect posture in civilised life. While the savage, though standing, walking, or running for several hours a day, assumes between whiles the recumbent posture, civilised man stands or sits in an upright position for more than 16 hours a day and only assumes the recumbent posture during the time spent in bed. In the upright position the cæcum and the ascending colon are very unfavourably placed for the onward progress of their contents. The ileum pours its liquid fæces into the cæcum and gravity steadily opposes its passage onward, so that these portions of the large intestine form, as it were, a kind of cesspool, the emptying of which is irregular, and even when it occurs it is seldom complete. The assumption of the recumbent position, especially if the body is turned from one side to the other, does much to assist the emptying of the first portion of the colon, and thus it is certain that in uncivilised man the many positions assumed during the day do much to assist the intestinal peristalsis. And it is quite probable that the food of uncivilised man was more favourable on the whole as a stimulant to the bowel wall than the products of modern kitchens, though this is another point altogether. The effect on the cæcum and ascending colon of chronic intestinal stasis, however produced, is definitely harmful; the viscera undergo much dilatation, and the cæcum is forced down into the pelvis. Similar dilatation of the rest of the large intestine also follows, and according to Mr. LANE numerous adhesions form, the presence of which modifies greatly the shapes, positions, and activities of the various portions of the large intestine.

Such being the mode of production of this chronic inactivity of the bowel, we turn to the symptoms ascribed to the absorption of toxins to which the constipation gives rise. The chief symptoms are headache, a feeling of physical and mental lassitude, an inability to perform the ordinary duties of life, much mental misery and distress, and the want of control over the temper which makes these patients unhappy, and unpleasant not only to themselves but to those about them. Various nerve irritations appear; migraine and other neuralgias torment the patient, and by their presence intensify the mental discomfort from which they are already suffering. Auto-intoxication possesses still another power of harm; it has a definite effect on the resistance of the individual to the entry of harmful organisms. Mr. LANE even considers that tuberculosis may find an efficient aid in its entry into the body in the weakening effect of these intestinal toxins, and he claims that the examination of a large number of children affected with chronic tuberculous disease of joints has shown the presence in them of unmistakeable signs of auto-intoxication. Among these he includes the condition of the skin which becomes thin, inelastic, and abnormally dark. It is recognised generally that the peculiar tint of the skin in chlorosis is definitely dependent on chronic constipation, and various other changes of colour of the skin also own a similar origin. The amount of cutaneous staining varies greatly, according to Mr. LANE, with the type of individual. In light-haired patients a very advanced stage of auto-intoxication may exist and yet it may be unaccompanied by any obvious staining of the skin, while in dark-haired people the pigmentary modifications show themselves early. Other signs and symptoms of chronic intestinal stasis might be mentioned—all those, indeed, that usually mark prolonged constipation, but we will assume that the condition can be recognised, and come to the important question of treatment.

There is little room for dispute as to the facts of the absorption of intestinal products from the undue retention of fæcal material within the bowel, though opinions certainly differ widely as to the significance to be attributed to them. While some will think that the results of auto-intoxication are of the highest importance, many will be inclined to minimise the damage produced by the toxins absorbed and

will be inclined to ascribe to other causes the symptoms credited by Mr. LANE to chronic intestinal stasis. It is, however, when we come to treatment that the greatest divergence of opinion will be found to exist, and it is on this portion of the subject that the novelty of Mr. LANE'S opinion mainly rests. He agrees, of course, that surgery has nothing to say until medical and mechanical methods of treatment have been tried and have failed. When, however, all the usual medical and mechanical methods for the relief of this chronic constipation have been tried Mr. LANE holds that the aid of a surgeon should be invoked, and various degrees of operative interference are recommended by him corresponding to the various degrees of severity of conditions existing. In some cases he has obtained considerable success by the mere division of constricting bands, and most surgeons who have had much experience in abdominal surgery will agree that cases do occur, though they are not common, in which a very intractable chronic constipation has yielded to the division of a constricting band. When the case is more severe, and mere division of adhesions will not suffice, Mr. LANE employs one or other of two more radical measures. The simpler of these is the division of the ileum near its attachment to the cæcum, and its transplantation to the sigmoid flexure, so that the intestinal contents no longer traverse the whole of the large bowel, but take a shorter route and pass only through a portion of the sigmoid flexure and the rectum. The more liquid nature of the fæces is sufficient to prevent any accumulation, and the previously troublesome constipation disappears at once, and with it, Mr. LANE tells us, disappear also all the serious symptoms which resulted from it. The skin clears and gains its normal colour, the mind of the patient is relieved from the anxiety and irritability which formerly interfered with its normal action, and the temper of the patient shows definitely the good which the operation has done. There are, however, some cases which Mr. LANE considers are not adequately treated by this operation of transplantation of the ileum, and in these he considers it necessary to excise the whole of the large intestine except the sigmoid flexure and the rectum, an operation of no great difficulty in itself but one accompanied by a large amount of shock, a matter of especial anxiety in subjects so much debilitated as most of these patients are. The same beneficial results follow upon the success of the larger procedure, and in addition there is no risk of any of the intestinal contents passing backwards in the cul-de-sac formed by the large bowel.

We cannot doubt the benefits ascribed to these operations by Mr. LANE, who has shown the medical profession many of his successful cases, but we think that hardly sufficient stress has been laid on the question of the risk of the operation itself. We have not been able to find any very definite statements as to mortality of operation; but deaths have occurred, and it would be well if we could see at a glance the exact effects of the operation with regard to mortality. The whole question must depend on whether the risks of persevering with medicinal treatment would be less than those of an operation. Are the dangers and discomforts of chronic intestinal stasis sufficient to justify the recourse to operative procedures in which the risk to life is by no means slight? It must be acknowledged that in this country the number of those surgeons who accept Mr. LANE'S views on this matter is comparatively small. Abroad they have met with more recognition, but in most countries it seems to be felt that sufficient data are not available for coming to a decision. We are sure of these things—that the evils of chronic intestinal stasis have not been fully recognised, and that the condition needs more attention than it often receives. The mere administration of a purgative and a few instructions as to diet are often considered to be sufficient treatment for chronic constipation which may have lasted many years. This unenterprising policy should not continue. On the other hand, although Mr. LANE has done good service in bringing forward the methods he advocates, and has shown extraordinary perseverance in the face of much opposition in advancing our knowledge of the capability of operation on the large bowel, we doubt if he has yet proved his case as to the frequency with which such extensive operations as excision of the large intestine are required. In other words, we want to know more of the risk of the operation so as to decide how large a number of cases should fall into the class where operative procedure is justifiable.

Hospital Sunday, 1909.

THE annual collection of the Metropolitan Hospital Sunday Fund will be made on Sunday, June 13th, and on the eve of the event we again express the hope that the appeal in the places of worship of all denominations in and around London will arouse a free and generous response. We know that the liberality of many congregations is taxed on frequent occasions, perhaps weekly, on behalf of deserving causes, but we urge the claim of the hospitals of London as one of paramount importance, worthy to be met by a donation exceeding the usual weekly offering. As a number of persons leave London at the end of the week in order to spend Sunday elsewhere we trust that they will be mindful also of the needs of the Fund. Many of them may attend worship on Hospital Sunday at places where no collection is made on behalf of this great distributing agency of London's charity, but it will give them little trouble to send their gift direct to the office of the Fund at 18, Queen Victoria-street, E.C., if they have omitted to entrust it to a friend for addition to the offertory.

In enjoining upon all that they should give generously and that they should treat Hospital Sunday as a special occasion, we are not unconscious that the present year is likely to be one of exceptional need for our charitable institutions, and that the benevolent coöperation of all will be required even more than in past seasons in order to maintain the Fund at its usual high level. THE LANCET holds no brief for Government or Opposition, and expresses no views on political questions from a party point of view, but we need not therefore ignore the fact that the financial proposals of the Chancellor of the Exchequer, whether justified or not by our needs and our circumstances, must seriously affect our voluntary hospitals. Under those proposals many will find their contributions to

Imperial taxation increased materially, and we do not shut our ears to statements which have been freely made that some at least of those affected may have to recoup themselves by diminishing their contributions to charity. If they are compelled to do this, and if the hospitals suffer thereby with other charities, then it behoves all who are not driven to such an unfortunate point of penury to put forth an additional effort to make good the loss involved. We have referred only to those obliged out of necessity to curtail their generosity. Others may feel disposed to do so, but we trust that they will dismiss the thought from their minds as an unworthy one. We feel sure that upon reflection they will realise that any effort of self-denial, any decision to forego a temporary and fleeting luxury, or even some much desired pleasure, would be preferable to allowing their personal loss to be transferred to those noble institutions whose cause we are pleading. The hospitals of London, if they crave for aid in their financial necessities as a visible and substantial token of public recognition of the great work which they carry on, have no reason to complain that their usefulness is not held in high esteem. Indeed, the main reason of their perpetual appeals for help lies in the increased and increasing appreciation bestowed upon them and in their desire to prove themselves worthy of it. They have to strive to do more each year because each year more is expected of them. And the help which they receive should be proportionate to the growing arduousness of their task.

The report of the Royal Commission on the Poor-laws affords in numerous passages proof of the huge burden cast upon the rates by the sickness or premature deaths of parents in the humbler classes of society, to which subject Mr. BURNS also referred in the eulogy of modern medicine with which he declared the Tuberculosis Exhibition open last week. We would remind the public that the work done in the hospitals tends, directly and indirectly, to prevent and diminish the accumulation of that burden, and that what the public gives in charity is to no small extent repaid to them by the hospitals and by the unpaid work of their medical staffs. A committee appointed by the Home Secretary for the purpose recently issued a report upon the provision of a rapid and effective service of ambulances throughout the metropolis. In our special supplement published on behalf of the Metropolitan Hospital Sunday Fund we pointed out that the holding of this inquiry showed the importance attached to the work of the hospitals and to the promotion of such a service, but that its institution in accordance with the recommendations made would mean no small increase in the number of cases brought to hospitals of all kinds for treatment. But already aid to the sick and injured is supplied in every hospital of the metropolis to the full extent of its financial power, and we urge upon all that the supply should be made as nearly equal as may be to a demand likely to be augmented considerably. The supply will never exceed the demand, for the hospitals aim at one ideal—"Efficiency"; and efficiency for them is inseparable from constant movement forward along that path of scientific progress, the pioneers of which work in the hospital wards. Medicine desires to place, through the generosity of those who are wealthy by comparison, the benefits of therapeutic and surgical skill and of nursing, all of the highest order, at the disposal of those whose poverty would otherwise set the boon beyond their reach, leaving them to die unaided. Therefore, the demand for aid never lessens, and in urging it on behalf of the Metropolitan Hospital Sunday Fund we appeal to all, whatever their financial circumstances, to give generously, in the assurance that their gift, whether great or small, will be wisely and economically administered, and that it will do its full share in maintaining those great charities among which the Metropolitan Hospital Sunday Fund annually distributes its resources.

Annotations.

"Ne quid nimis."

THE MODERN TREATMENT OF FRACTURES.

WE publish this week an address entitled The Modern Treatment of Fractures, delivered by Dr. Lucas-Championnière, the President of the International Society of Surgery, before the Cardiff Medical Society on Friday last, June 4th. Compared with the progress which has been made in most departments of surgery, the treatment of fractures has lagged far behind. The rules laid down in the dawn of medicine held good until a very recent date, and as certain of these were based on theory rather than on practice it is not surprising that the best results should be withheld from those practitioners who will not allow the possibility of modification. It is still taught by many surgeons, and was until recently universally believed, that the essential principles of the treatment of a fracture are that the fragments of the bone should be replaced exactly in their former position, and that they should be there held fixed for a sufficient time to allow the fragments to become firmly united. These are the directions which are found repeated, the words merely being varied, in nearly every text-book of surgery or treatise on fractures up to the present time, and in most cases without addition or qualification. There are, however, considerations which give rise to some doubt as to the correctness of these generally received principles. The formation of callus is essential to the union of a bone, and it is certain that the chief factor in the determination of the amount of callus formed is the amount of movement of the fragments. Further, it cannot be accepted as essential that the fragments must be replaced in their original position with anatomical accuracy. The introduction of the Roentgen rays produced shocks in the minds of not a few surgeons, for they found that fractures which had seemed to be accurately reduced were often in a by no means perfect position when they were scrutinised by the new exponent. Various slight displacements were seen to be present, and yet the limb was as useful as its fellow. It cannot be too firmly laid down that the true test of the success of the treatment of a fracture is functional activity. To have the fragments of a bone in perfect position will not serve unless the utility of the part is also completely restored, and if the utility of the limb is perfect the precise positional relation of the fragments matters little or nothing, cosmetics apart. The introduction of the x rays has not been wholly beneficial to the operating surgeon, for in the first place skiagrams are very liable to misinterpretation, and secondly, the fact that the fragments of a bone are not in perfect apposition may lead the unlearned to think that the treatment of a fracture has been unsatisfactory. Dr. Lucas-Championnière's method of treatment

consists in early massage of the limb and mobilisation, commenced within the first 24 or 48 hours. These he holds to be of capital importance, for by their aid sufficient callus is formed to unite the fragments firmly, the absorption of effused blood and serum is favoured, the mobility of the limb and of the neighbouring joints is assured, by all of which convalescence is hastened. It is often objected to this method that it is, or at least may be, very painful, but the statement is made chiefly by those who have never seen the method employed. No one who has had experience of the treatment of fractures by massage and mobilisation can doubt that this method often diminishes the amount of pain which the patient suffers, not only during the period of consolidation of the fracture but also after the fracture has united. The treatment by fixation has a great tendency to cause stiffness in the muscles of the limb and in the adjoining joints, while the breaking down of adhesions caused by prolonged rest is often one of the most trying portions of the whole treatment. This part of the pain resulting from a fracture is entirely avoided by Dr. Lucas-Championnière's tactics, for when the pieces of the broken bone have united the functional activity of the limb is unimpaired. The results of this treatment fully justify its adoption in suitable cases, but there must be care in its employment. Splints cannot be absolutely discarded, for when the tendency to displacement is very great they will be required after the limb has been massaged. In other cases splints may be used with advantage but removed each day while the massage is given. In short common sense must be employed to control the unrestrained use of massage and mobilisation, for it is not difficult to imagine cases where, from the conditions in which the patient is situated, or from other considerations, the full carrying out of massage and mobilisation is impossible. The views expressed by Dr. Lucas-Championnière have not been accepted by the majority of our surgeons, and this may have been due to the wrong application of his teaching; but there are many indications that the new methods are gradually gaining ground as we learn more of their range of utility. To those of our readers who are unacquainted with the treatment by massage and mobilisation the reading of Dr. Lucas-Championnière's address will afford much interest, and they might supplement this information by the study of the volume which he published in 1895. The careful practice of the doctrines inculcated will, we believe, be followed by an appreciation of their value.

THE "INDIVIDUAL CUP" AT THE HOLY EUCHARIST.

SOCIETY, in Mr. Gladstone's phrase, must "stand the recoil of its own principles." It must equally be prepared to modify its usages in the light of better knowledge. Of this truth the Church of Scotland has just been affording illustration at its General Assembly, before which a committee reported that on medical, among other, grounds the use of the individual cup at the Communion table ought not, in the opinion of the said committee, to be prohibited. In the course of a debate on the same subject at last year's sitting of the same Assembly it transpired that the falling-off in attendance at the Communion table was largely accounted for by the reluctance of many of the congregation to apply their lips to the cup which had already been similarly touched by fellow communicants whose personal cleanliness, nay, whose exemption from contagious disease, was more than doubtful. Gruesome details of the physical "unpreparedness" of these communicants to take part in the mystic rite were freely set forth, while more serious still was the suspicion that the common cup might be used by this or that communicant suffering from malignant disease, incipient or developed, and that positive danger to health, nay to life itself, was incurred by the use of that cup passed on to the next communicant. Impressed with these revelations the General Assembly appointed a committee to consider the whole question in all its aspects, medical and other, with the result that it has just had to take action on that committee's finding, by which, as already stated, the communicant should not be "prohibited" from using his (or her) "individual cup." An amendment, based on a "minority report," was subsequently proposed that the "innovation" in question should not be permitted and that the communicant should be allowed to take his (or her) chance of the "septic touch," or worse, as had hitherto been "the practice of the Church of Scotland." To this a counter motion was made that "the movement for change should be discouraged as strongly as possible without absolutely forbidding it." On a division being taken this motion was carried, "amid applause," by 240 votes to 145; so that in future the "individual cup" may be used by those who have fortitude enough to disregard the haply wounded *amour propre* of their fellow communicants or the possible imputation of thinking unduly of their corporeal interests at a peculiarly spiritual observance of the Church. How the innovation may work out in practice remains to be seen. Meanwhile, the question is one of a class from which no Church is altogether exempt—a movement, medically inspired, having long been agitating the Latin communion for the more frequent renewal of the holy water kept at the entrance of cathedral or basilica, the said water being so contaminated by the touch of the poorer among the faithful as to become an active medium for the propagation of disease.

THE PROPOSED NEW EALING HOSPITAL AND ITS STAFF.

THE unfortunate controversy which raged for some two years around the visiting staff of the Hampstead General Hospital, and which did much to upset the popularity of an undoubtedly useful institution, is now happily a thing of the past, and the success of a recent festival dinner on behalf of the hospital was such that we may hope it will enjoy a career of extended utility under its new *régime*. There are, however, indications that in another London suburb similar trouble is in danger of arising, and in the interests both of the sick poor and the medical practitioners in that locality it appears to us desirable to make a statement of the facts as they have come before us. Ealing has for a number of years possessed a Cottage Hospital of some 30 beds staffed by local practitioners, with the assistance of a London surgeon who has attended to perform operations requiring exceptional skill, and we believe that the professional conduct of the institution has been entirely satisfactory to its beneficiaries and subscribers. Money is now being raised to rebuild the hospital and enlarge it so as to accommodate about 50 beds. The appeal for funds for this purpose has met with fair success, and a considerable contribution has been offered by the King Edward's Hospital Fund for London, but on the embarrassing condition that the hospital shall be conducted on the lines of a metropolitan general hospital. We understand that the King's Fund has not entered into a detailed explanation of this condition, but in the light of the policy pursued by that body during the negotiations for the amalgamation of the Hampstead and North-West London Hospitals it is not hard to foresee that the Fund anticipates the replacement of the Ealing local staff by a body of metropolitan "consultants." It is also not hard to foresee that any such procedure will be resented by the majority of the Ealing practitioners on exactly the

same grounds as it was resented at Hampstead, and we are not at all sure that the Ealing Hospital will weather such a storm as is likely to break around it when its subscribers realise the choice which they will have to make. It is on this account that we call attention to the matter before it is too late for friendly settlement, as we conceive it to be to the advantage of the hospital that its supporters should realise the responsibilities which unqualified acceptance of the subsidy of the King's Fund will probably entail, and we advise any medical practitioners who may be interested in the result to lay the case of local staff *versus* London staff before the people who will be called upon to make the decision. Our own feeling is that the local conditions in Ealing are such that the hospital is unlikely to thrive if the services of the local practitioners are dispensed with. The suburb is a well-defined municipal entity with a fair amount of local spirit, and if its medical men were driven into an attitude of corporate hostility or even of indifference to the success of the now expanding hospital we fear that the institution may not only cease to expand but even cease to exist. Again, it may not prove an easy matter to obtain an efficient London staff in the face of medical opposition in the district, and taking all the circumstances into consideration Ealing would do well to ask itself before it goes any further, "Shall we support our new hospital ourselves and run it in our own way with a staff resembling that of the old Cottage Hospital, or shall we accept a handsome subsidy towards the building from King Edward's Hospital Fund and be prepared not only to say good-bye to our local staff, but to lose their sympathy with the future work of the institution?" Hampstead had to answer that question, but we are not at all satisfied that Ealing can give the same answer without severely damaging its local hospital. We think that a staff of local physicians and surgeons, strengthened by one consultant physician and one consultant surgeon from outside will best meet the particular conditions of the case.

THE NATIONAL SOCIETY FOR THE PREVENTION OF CRUELTY TO CHILDREN.

A SUMMARY of the report of the Society for the Prevention of Cruelty to Children was given in THE LANCET of May 29th, p. 1577. It is a satisfactory document recording the progress and work of the society during the 12 months immediately preceding its entry upon the twenty-fifth year of its existence, and the meeting which celebrated that anniversary afforded no less cogent proof of the high position won and maintained by the society. The meeting referred to was held at the Mansion House, with the Lord Mayor in the chair; among those who addressed it in praise of the good work done by the society were the Lord Chief Justice of England, Mr. Curtis Bennett, second to none in experience as a London magistrate; and Mr. Herbert Samuel, M.P., the energetic young Minister largely responsible for the recent Children Act, who declared his indebtedness to the unfailing assistance of the society's director in the preparation and discussion of that measure. The names of the supporters of the society are proof of the triumph achieved by persevering work, in the teeth, sometimes, of inert obstruction and active opposition. The attitude of the legal profession, for example, has not always been one of sympathy towards the society. Twenty years ago it used to be a commonplace opinion among members of the Bar who criticised its proceedings that the society must be mistrusted, and its evidence submitted to closer scrutiny than that accorded to other prosecutors, because the society always assumed the guilt of the defendant, refused to abandon that assumption, and fought tooth and nail for a conviction in order to obtain subscriptions from the benevolent by quoting records of success. It may be suggested that perhaps this was true then, and that experience has taught those responsible to adopt a more judicial position. We doubt, however, whether this is the case, and we are inclined rather to believe that the society in its early days, as now, satisfied itself that a case was one which in the interests of justice ought to be taken up, and then laid its evidence fairly before the tribunal, leaving accused persons to make good their defence exactly as they are left to do in other criminal trials. We observe, at any rate, that Mr. Curtis Bennett spoke of the society at the Mansion House as prosecuting only when it was absolutely necessary, and that Lord Alverstone, who said he had been present at the birth of the society, declared that for one case of excessive zeal or of imprudence on the part of its inspectors there were hundreds of cases never heard of by the public in which they had brought relief to suffering children. His lordship also spoke of the share taken by the society in promoting the upbringing of children to be healthy, happy, strong, and willing citizens of the empire. This is an aspect of the society's work and of its aspirations which brings it closely into sympathy with the medical profession, and it must not be forgotten that in nearly every important and contested case which the society is compelled to ventilate and to fight out before judge or magistrate it is almost certain to be the medical evidence which turns the scale. The negligent or brutal parent or guardian, through his advocate, struggles to secure acquittal. The evidence of neighbours or of servants is belittled and ingeniously ascribed to motives of personal hostility to the defendant, to lack of accurate observation, or to any other cause than the desire to tell the truth. The medical witness goes into the box and it is at once found that against him no suggestion of animus can be raised, and that his evidence is of facts seen and described by a scientific observer. He tells the jury of the condition in which he found the child when he first saw him, giving particulars of his weight, his general physical and mental condition, and the marks on his body, and he points out where the matters thus noticed corroborate the story told by other witnesses of cruelty or neglect. He then recites the facts observed on a subsequent occasion, when, perhaps, after a few days only, there has been rapid increase of weight and improvement of condition, evidently due to the substitution of ordinarily proper treatment for neglect and ill-usage. Upon such an occasion the guilt of the accused is usually established beyond the possibility of doubt. On the other hand, if the weight of medical testimony is on the side of the person charged he has the full benefit to be derived from the absence of any motive to espouse his cause, and in that case also when such evidence turns the scale there can be little question as to the justice of the decision arrived at.

SYPHILITIC SCIATICA.

No form of sciatica remains more rebellious to treatment than the syphilitic unless it is recognised and treated specifically. It is a variety of sciatica the relation of which to preceding syphilis is much more likely to impress itself on the physician if it occurs in the secondary stage than if in the tertiary. The possibility of syphilis being causally related to sciatica must always be taken into account, though the interval between the two be a long one. In the *Lyon Médical* for December, 1908, M. Favre and M. Roubier describe the case of a man aged 37 years, who contracted syphilis at the age of 24, and who for three months had suffered agonising pain in the typical sciatic distribution on the right side. Treatment by accepted methods, physical and medicinal, had proved of no avail. On the affected side

the knee-jerk was exaggerated, the tendo achillis jerks were present and equal, there was no affection of the sphincters, and no loss of sensibility was discoverable. Under treatment with 60 grains of potassium iodide daily and injections of mercury biniodide a complete and apparently lasting cure was effected in 18 days. Syphilitic sciatica may appear as a secondary or as a tertiary phenomenon. In the former case it occurs from six to 12 months after the chancre, and according to Fournier is rarely complete, being usually limited to a segment of the limb; its evolution is capricious, it is liable to exacerbations and remissions, nocturnal paroxysms being specially apt to occur; it yields readily to antispecific treatment. The latter presents the classical symptoms of sciatica, with spots painful on pressure; it is peculiarly intense and persistent, and, like sciatica of the secondary stage, frequently worse at night; irregular anæsthesias may occur and sometimes muscular atrophy. Pathologically, it is due to a syphilitic sclero-gummatous neuritis, in some cases possibly to a syphilitic osteitis or periostitis. In diagnosing between a pure trunk sciatica of this nature and sciatic neuralgia from syphilitic disease of the spinal roots it is worth remembering that exaggeration of the pain by coughing or sneezing is strongly suggestive of the latter condition. In this, further, we should expect to find anæsthesias of radicular distribution, occurring commonly in the following order: fifth lumbar, first sacral, second sacral, and fourth lumbar, and finally a lymphocytosis of the cerebro-spinal fluid.

THE TEMPERATURE, RAINFALL, AND SUNSHINE OF MAY.

THE month of May is, taking the average for a long series, the most sunny month of the year over Ireland, Scotland, and the western and north-western counties of England, but over the eastern half of England, June, July, or August generally supplies the greatest number of sunny hours. The month which has just elapsed has been unique for the extraordinary allowance of sunshine, its record not only beating easily that of all the preceding Mays since the inauguration of the automatic sunshine instrument in 1881, but being higher in some parts of the kingdom than during any month of the 12 since the record began 28 years ago. This is all the more remarkable, as during the month of April there was also a great excess, that month affording more sunshine over a considerable portion of the kingdom than any of the 28 preceding Aprils. It has frequently been one of the most striking features of the sunshine during the past few years that the London record, as represented by Westminster, has been steadily diminishing the extent of the minus difference between the metropolis and the resorts on the south coast. The figures in the table show the same tendency in a rather marked degree, Westminster recording 134 hours more than the average, while the excess at most places on the south coast is less than 110 hours. The aggregate in London, 297 hours, or rather more than nine and a half hours per day, was considerably higher than those in the North of England, and also exceeded that at Margate, while it was only three hours less than the record at Yarmouth. At Greenwich the figure was 326 hours, or only ten hours less than that at Brighton. It will be seen that there was very little difference between the totals in any part of the South of England, inland places such as Bath and Tunbridge Wells getting about the same number of hours as the coast. At the very top of the scale stand Hastings and Folkestone, with the respective total of 340 and 341 hours, equal to 11 hours per day, and at the bottom are Manchester and Aberdeen with 200 hours, equal to six and a half hours per day. As would naturally follow from such uninterrupted sunshine, the number of rainy days was very small. There was, in fact, scarcely any rain during the first three weeks of the month, and it is open to question whether the undoubted benefit arising from the brilliant sunshine was not in a certain measure counterbalanced by the lack of the usual number of showers to cleanse the atmosphere. The great dryness was certainly very detrimental to some of the ordinary farm produce. In spite of some very sharp and damaging frosts during the earlier half of the month the mean warmth of the whole period was slightly in excess of the average in nearly all places represented in the table, the warmest spot of all being London, with a mean temperature of 54·3°. The mildest nights, however, were experienced at Torquay and Llandudno, where the mean minimum temperature was 1° higher than in London, and between 4° and 8° than in the North Midlands. Round about the middle of the month the range of temperature between the early morning and the afternoon was unusually large, but the mean diurnal range for the month was not at all high considering the general state of cloudlessness. In this respect such widely separated places as Scarborough, Margate, Hastings, Torquay, and Llandudno shared alike, their mean range being no more than 14°.

Stations.	Highest temperature.	Lowest temperature.	Mean maximum temperature.	Mean minimum temperature.	Mean temperature for month.	Mean diurnal range of temperature.	Number of days with rain.	Total fall in month.	Difference from average.	Number of hours of bright sunshine.	Difference from average.
	°	°	°	°	°	°	*	ins.	ins.		hrs.
London (Westminster) ...	81	35	63	45	54·3	18	9	1·42	− 0·17	297	+ 134
Manchester ...	80	33	61	44	52·1	17	13	1·53	?	200	?
Nottingham ...	80	32	62	42	52·0	20	12	1·12	− 0·80	280	+ 99
Bath	79	29	64	42	52·8	22	6	1·55	− 0·48	320	+ 118
Harrogate ...	75	29	59	40	49·4	19	11	1·79	− 0·19	236	+ 63
Buxton	77	24	59	38	48·1	21	15	2·71	+ 0·42	251	?
Tunbridge Wells	81	33	62	42	51·8	20	9	1·87	+ 0·06	55	+ 105
Margate	80	37	57	43	49·8	14	5	0·96	− 0·64		+ 90
Hastings	72	36	59	45	52·1	14	8	1·11	− 0·49	341	+ 106
Folkestone ...	77	32	59	44	51·6	15	6	0·75	− 0·98	340	+ 117
Brighton	70	35	60	44	52·3	16	8	1·03	− 0·66	336	+ 103
Bournemouth...	74	31	63	43	52·8	20	6	1·12	?	334	?
Torquay	73	36	60	46	53·0	14	7	0·90	− 1·09	315	+ 91
Llandudno ...	74	32	60	46	52·7	14	10	1·02	− 0·82	283	+ 77
Blackpool... ...	73	29	58	41	49·6	17	12	2·08	+ 0·05	287	+ 99
Aberdeen... ...	68	33	53	43	50·1	15	19	2·52	+ 0·41	200	+ 11
Scarborough ...	73	32	56	42	48·8	14	11	1·16	− 0·80	231	+ 47
Yarmouth ...	72	33	56	44	50·1	12	8	1·27	− 0·61	300	?

* A day with at least 0·01 inch.

INTRACRANIAL HÆMORRHAGE IN THE NEW-BORN.

THE occurrence of hæmorrhage from the cerebral veins which lie beneath the dura mater is one of the common causes of infantile cerebral hemiplegia and epilepsy, spastic paraplegia, diplegia, and other conditions for which when they come under observation relatively little can be done. To Cushing of Baltimore belongs the credit of working out the problem of their treatment from the point of view of early surgical intervention, and the results he has obtained demand the most favourable consideration. The superior longitudinal sinus receives from 10 to 12 veins from the superior cerebral surface on each side. The presence of these large vessels, in relation more particularly to the coronal and lambdoidal sutures, suggests the possibility of their injury in the displacement and overlapping of the cranial bones during parturition. The symptoms of

the condition are those of cerebral compression, and it seems to be characteristic of many of these cases that localising signs are absent. In the *Boston Medical and Surgical Journal* of April 22nd Dr. Torbert, of the Boston Lying-in Hospital, describes two typical cases. One concerned the infant of a primipara, delivered by low forceps after an 18 hour labour, where everything seemed to have gone well till the fifth day. Then the child refused to feed and appeared stupid. His limbs became stiff, although they were still moved. The anterior fontanelle became tense and ceased to pulsate. A lumbar puncture was done and a teaspoonful of blood-stained fluid obtained. It was decided safe to delay until the result of catharsis could be seen, but the child sank and died a few hours later. The whole cerebral hemisphere on the right was then found to be covered with a fresh hæmorrhage, which extended below the tentorium. In the second case the symptoms appeared on the second day, the child being cyanosed, with twitching of the right side of the face, and the anterior fontanelle bulging. In the course of a few hours death ensued and the left hemisphere was found covered with recent blood-clot. The only hope for beneficial results lies in immediate operation. Last year Cushing reported nine cases with four recoveries; in 1905 he published four cases with two recoveries. In every case the diagnosis is made entirely on symptoms of cerebral compression, which vary somewhat as the compression is supra- or infra-tentorial.

THE FORTHCOMING HEALTH CONGRESS AT LEEDS.

PROGRESS in sanitation and hygiene depends in a great measure upon the education of the public in regard to such matters, and the attitude of municipal corporations towards health problems and their solution may react either for good or for evil upon public opinion. The Lord Mayor of Leeds, Alderman F. J. Kitson, is therefore to be congratulated upon the keen interest which he shows in the forthcoming Health Congress organised by the city and University of Leeds, with the coöperation of the Royal Sanitary Institute and the Royal Institute of Public Health. It will be held from July 17th to 24th. On May 18th a meeting was held in the town-hall of Leeds under the presidency of the Lord Mayor, when he issued an urgent appeal to all leading citizens to assist in the social side of the Congress, and pointed out that matters of health ought to receive the attention of the whole of the community. The President of the Congress is Colonel T. W. Harding, J.P., D.L., a member of the Royal Commission on Sewage Disposal, and the general secretaries are Dr. J. Spottiswoode Cameron, medical officer of health of Leeds, and Mr. R. E. Fox, the town clerk of that city. According to the preliminary arrangements, the sections will include: Preventive Medicine, of which Dr. Arthur Newsholme, Principal Medical Officer to the Local Government Board, is the president, and Dr. R. V. Clark and Dr. Charles Porter are the secretaries; Industrial Hygiene, with Dr. B. A Whitelegge, C.B., Chief Inspector of Factories to the Home Office, as president, and Dr. F. W. Eurich, Dr. A. G. Wilson, and Miss Maynard as secretaries; Child Study, the president of which is Dr. George Newman, Principal Medical Officer to the Board of Education, and the secretaries Dr. J. R. Kaye and Miss Alice Ravenhill; and Biology and Chemistry, to be presided over by Dr. A. S. F. Grünbaum, professor of pathology and bacteriology in the University of Leeds, with Dr. T. Orr as secretary. There will also be an Engineering and Architectural section. A conference of municipal representatives will be presided over by the Lord Mayor of Leeds, and a conference of veterinary surgeons and of sanitary inspectors will also be included in the programme. The address of Dr. Cameron, the secretary, is 41, Park-square, Leeds, from whom further particulars of the Congress may be obtained.

BENZOIC ACID IN CRANBERRIES.

WHEN certain substances usually referred to as chemical preservatives are found to be normal constituents of foods, a serious difficulty may arise in the event of legislation being directed to the prohibition of the preservative. Salicylic acid, it is true in small quantity, has been found in some fruits and in wine, and recently benzoic acid in very appreciable quantity has been found in cranberries. The dried berry contains as much as 0·45 per cent., and when warmed the free benzoic acid is expelled and may be caught as a crystalline sublimate. We do not remember to have heard that cranberries have been banned on account of producing injury to health; but certainly some authorities have, on the force of experiments made with benzoic acid or benzoates put in food administered to the human body, condemned the use of these substances for preservative purposes. The conclusion, however, has been attacked by other observers, who claim that in moderate quantities, though sufficient for preserving purposes, benzoic acid or the benzoates are harmless. It would be interesting to find whether cranberries in large doses are injurious outside any ordinary effects upon the stomach; though if they proved not to be so, the explanation might be that benzoic acid from natural sources produces no injurious results, while when it is prepared artificially or by synthesis, perhaps because a foreign constituent is present, its exhibition is not so innocuous.

TROPICAL ADENITIS AND PLAGUE.

IN a paper published in THE LANCET of June 5th, p. 1595, by Dr. R. Leonard Ley, attention was directed to some cases of illness characterised by chronic buboes of some size, especially in the groin, which had come under his observation, the patients having seemingly contracted their illness in India or elsewhere in the Far East. This form of adenitis, in Dr. Ley's opinion, is "due apparently to an as yet unrecognised organism," which may have been transmitted to man by animals, such as horses and mules. He also throws out the suggestion that possibly the disease may bear the same relation to bubonic plague that cow-pox does to small-pox, and that it may in the same way as cow-pox be transmitted to man. For some years it has been well known that many natives of the East suffer from non-venereal buboes. Manson and Scheube have described such cases of tropical adenitis, which are said to be generally of a chronic kind, excision of the enlarged glands hastening the cure. As yet no satisfactory explanation has been forthcoming as to the origin of these cases, though Manson thinks they may be due to some virus which has gained an entrance to the body through some small wound, abrasion, or insect bite, on the leg or foot. Some competent bacteriologists have made careful search for a specific organism in the enlarged glands, but so far without success. Cantlie and Hewitt as well as other observers have discussed the bacteriology of such cases and the possible relation of this form of adenitis, called by some "climatic bubo," to bubonic plague. Cantlie has regarded such cases as a modified manifestation of plague which he named "*Pestis minor*," regarding it as often being a precursor of a more serious plague epidemic. But most experts now hold the view that there are no adequate reasons for regarding oriental adenitis as having any connexion whatever with true plague. Glandular enlargement is a frequent accompaniment of tropical disease, and it is therefore possible that the cases which Dr. Ley and others have met with are not due to

one specific organism alone, but may be instances of the secondary effects of various diseases contracted in the tropics. In our opinion no evidence has been brought forward to justify the view that these cases of chronic non-venereal bubo contracted in India and the Far East, described by Dr. Ley and others, have any relation at all with true bubonic plague. Nor have we received any evidence that horses or mules are susceptible to plague, or that the inoculation of plague bacilli into these animals produces any local disease communicable to man in the way that small-pox when inoculated into the bovine animal produces a local disease transmissible to human beings.

THE CHURCH ANTI-VIVISECTION LEAGUE AND HOSPITAL SUNDAY.

WITH the approach of Hospital Sunday our attention is, not for the first time, directed to the pamphlets sent out by a body bearing the title of the "Church Anti-vivisection League." Everyone has a right to publish his opinion, and even to try to bring over others to his way of thinking, provided that by so doing he will do no harm to others and that he does not bolster up his own opinions by means of perversions of the truth. But the provisions are of importance. We have had to comment upon the literature issued by the Church Anti-vivisection League upon a previous occasion, when it became evident that the honorary secretary had no idea of what constitutes "proof." It is now evident from a publication before us that the League has no idea of what constitutes truth. Anti-vivisectors are fond of quoting Tennyson as an opponent of vivisection. He undoubtedly was so, but he also wrote that "A lie which is half the truth is ever the blackest of lies." We err on the side of charity when we say that the pamphlet now in question is half the truth, and though we have not space to go through the misrepresentations in detail, we will note one or two. On page 1 of the pamphlet, under the heading "1908, Hospital Laboratories and the Royal Commission," there are given some figures from the Parliamentary Return of Experiments on Living Animals in 1907. Figures are quoted and then we find the following sentence, "In the remaining 1199 experiments anæsthetics are alleged to have been used in the initial operation ....." Why does the League say "alleged"? It can only be because it wishes to make the readers of the pamphlet believe that vivisectors licensed under certificate B or B + E E or F tell lies when they return their experiments as being initially performed under anæsthetics. Further down we find, speaking of experiments without anæsthetics, "It is true that the vivisectors claim that the great majority of these experiments are inoculations or hypodermic injections, but it is also noticeable that this year, as usual, the Inspector inserts the qualifying expression 'and some few other experiments,' words which may cover anything." Now the Inspector expressly states on page 5 of the return which is being reviewed, when speaking of experiments without anæsthetics, that they "are mostly inoculations, but a few are feeding experiments, or the administration of various substances by the mouth or by inhalation, or the abstraction of a minute quantity of blood for examination. In no instance has a certificate dispensing with the use of anæsthetics been allowed for an experiment involving a serious operation. Inoculations into deep parts involving a preliminary incision in order to expose the part into which the inoculation is to be made are required to be performed under anæsthetics." Why does the League omit to quote this passage, and why does it say that "vivisectors claim that the great majority of these experiments are inoculations," implying by these words that they are not so? Most of the rest of the pamphlet is taken up with Colonel Lawrie's evidence given on March 25th, 1908, about an experiment by Dr. W. H. Gaskell which he (Colonel Lawrie) had witnessed on July 7th, 1894. Those portions of Colonel Lawrie's evidence which are not convenient to the arguments of the League appear to be omitted altogether. Furthermore, the evidence of Dr. L. E. Shore and other witnesses before the Royal Commission, all rebutting Colonel Lawrie's statements, is not given, the pamphlet merely saying, "It is hardly necessary to say that Dr. Gaskell and his assistants contradict Colonel Lawrie's assertions." The whole pamphlet is a mis-statement of facts. If the League acted up to its name it would remember the apostolic dictum —"the Church of the living God, the pillar and ground of the truth."

THE ANTITOXIN TREATMENT OF MALIGNANT ANGINA AND PARALYSIS IN DIPHTHERIA.

WHILE the value of antitoxin treatment in diphtheria is well established, doubt is entertained as to whether the malignant sore-throat and the paralysis of the disease are amenable to this remedy. M. J. Comby has warmly recommended the antitoxin treatment of diphtheritic paralysis,[1] but in France other writers, and in this country Dr. J. D. Rolleston, whose experience of the disease at the Grove Fever Hospital is great, have denied its value. Dr. Rolleston suggests that the good results claimed by M. Comby were due not to the treatment,[2] but to the fact that late diphtheritic paralysis in diphtheria is, as a rule, benign, and that since the introduction of antitoxin more patients have survived to suffer late paralysis. Moreover, Dr. Rolleston pointed out that the repeated administration of antitoxin recommended by M. Comby is not innocuous, but may produce rigors, vomiting, and collapse, and profuse urticaria. Recently these results have received more attention in consequence of the researches of Richet on "anaphylaxis," a term by which he describes the increased sensitiveness which animals present under certain conditions to a second dose of toxin. At a recent meeting of the Société Médicale des Hôpitaux of Paris, M. H. Méry, M. B. Weil-Hallé, and M. Parturier reported excellent results at the Pavillon Hospital from administration of antitoxin in increasing doses (*sérothérapie intensive*) in the malignant angina and paralysis of diphtheria. In 1908 they were struck with the number of children who succumbed to paralysis or to syncope after disappearance of the membrane. From Jan. 1st to Oct. 1st 622 children were admitted, of whom nine died from paralysis and three from malignant angina. They therefore endeavoured to obtain better results by modifying the method of treatment. M. Louis Martin advised them to give repeated injections of antitoxin during convalescence in cases of severe angina without waiting for the appearance of paralysis. At the same time they increased the dose during the acute period of the angina. They gave 40, 50, and 60 cubic centimetres on consecutive days. The membrane disappeared and the throat became clean; then they gave a dose of from 10 to 20 cubic centimetres every day or every other day. If paralysis occurred in spite of this preventive treatment they continued and even increased the dose of antitoxin, so that some patients received in all more than 500 cubic centimetres. From Nov. 1st, 1908, until March 1st, 1909, during which this treatment was adopted, they did not lose a single case of malignant angina, and no patient died from paralysis or from late syncope (248 patients were admitted from Oct. 1st to March 1st). Paralysis was observed in 18 cases, but usually was mild. However, in three cases of malignant angina of the most

[1] THE LANCET, July 28th, 1906, p. 243.
[2] THE LANCET, August 4th, 1906, p. 322.

severe type they were not able to prevent paralytic symptoms of an alarming character. In the severe cases subcutaneous injections of strychnine, sparteine, and adrenalin were also given. Under the latter the arterial tension appeared to rise. They did not think that there was any danger of anaphylaxis from repeated doses of antitoxin, for anaphylaxis usually results from administration of a small dose of antigen to an organism saturated with antibody. With large doses of antigen the danger is less. In the discussion which followed M. Netter said that he had found repeated injections of antitoxin useful in malignant diphtheria, though he had never given doses so large as those mentioned. He did not deny the danger of anaphylaxis, two cases of which he had observed, but that never prevented him from giving repeated injections of antitoxin in diphtheritic paralysis. He also praised the administration of suprarenal extract, which he gives by the mouth in severe diphtheria, having learned this treatment from Dr. Rolleston. M. Netter explained the good results on two grounds: in animals poisoned by diphtheria toxin there are manifest alterations in the suprarenal capsules; and in severe diphtheria the blood pressure is very low. In the heart failure of other infectious disease, such as scarlet fever, adrenalin has also given him "marvellous" results. He usually gives from 10 to 20 drops in the 24 hours in five or six doses.

THE VALUE OF MILK-SUGAR IN THE ARTIFICIAL FEEDING OF INFANTS.

IN order to increase the calorie value of diluted cows' milk used as a substitute for breast milk in the feeding of infants it is usually recommended to add cream and sugar, and since cream is too expensive for the poor to employ, and is, moreover, less easy to obtain free from bacterial contamination, sugar in some form is more generally utilised. Owing to the fact that the natural sugar in the milk of all animals is lactose, this sugar has been regarded as the best to use if possible, although its greater cost compared with other sugars, such as glucose, cane sugar, and malt sugar, is again an obstacle to its general use. According to the observations of Rubner, 243 parts of milk-sugar have an equal heat value with 100 parts of fat, and the milk-sugar has therefore been utilised in such proportions as to make up for the deficiency of fat and sugar in diluted cows' milk. Recently some few authorities have questioned the value of milk-sugar added to milk dilutions, and Dr. Richard Weigert of Breslau gives in the *Berliner Klinische Woohenschrift* of May 24th an interesting summary of these opinions, as well as a record of his own observations made at one of the municipal dairies in that city. Prechtl in 1901 appears to have been the first to write against the use of milk-sugar, on the grounds that it promoted the growth of gas-forming bacteria, and that it rendered the milk less easily digestible by separating the alkalies and calcium from their combinations with phosphoric acid. Finkelstein has also regarded milk-sugar as injurious, especially in dyspepsia, and further states that it is much inferior to cane sugar and to malt sugar as an addition to the diet. Czerny and Keller have also expressed the view that lactose is of minimal influence upon growth. As a result of his own observations, Dr. Weigert concludes that the addition of milk-sugar in 10 per cent. solution as a diluent for cows' milk is without influence upon the weight curve of infants, that it is without beneficial effect upon digestive disturbances, and may hinder the return to normal when given to infants with frequent slimy motions. Dr. Weigert found no advantage in employing milk-sugar solution over simple dilution with water or with some simple diluent such as barley-water. He points out that the matter has an importance apart from its scientific interest in regard to pædiatrics, since the expense to the authorities in supplying pure milk-sugar to the municipal dairies is by no means inconsiderable.

THE VICEROY OF INDIA UNDERGOING PASTEUR (ANTI-RABIC) TREATMENT.

IT is reported that Lord and Lady Minto have been obliged to undergo the Pasteur treatment in consequence of a pet poodle having been bitten by a mad dog, which bit two members of the subordinate staff. The poodle having been fondled by both Lord and Lady Minto, and its saliva being infectious if rabies is present, caused the Viceregal medical adviser, Colonel W. R. Crooke-Lawless, R.A.M.C., to summon assistance from the Pasteur Institute at Kasauli. The treatment of rabies has been very effectually carried out in India during the past seven years. There are two Pasteur Institutes in India—we believe they are the only British Pasteur Institutes in existence, and each under a director appointed from the Army Medical Service and financed by the Government of India. Details of the last report of the Kasauli Institute were published in our issue of May 29th.

IRRITANT WOODS.

AN interesting case was reported in these columns a few years ago, in which an acute irritation of the skin was traced to contact with satinwood. The dermatitis broke out amongst the operatives at a saw-mills where satinwood was being cut up. The sawdust has since been carefully chemically examined with a view to discover a definite principle to which the irritating effects might be ascribed. The investigation was undertaken by Dr. Auld, of the Scientific and Technical Department of the Imperial Institute, and some preliminary results have been placed in a paper read before the Chemical Society. By suitable treatment an oil present to the extent of 1 per cent. was extracted, which, however, did not appear to possess irritant properties. A small quantity of an alkaloid, however, was obtained which, reduced from its solvent, appeared in prismatic crystals. It is apparently an alkaloid not yet included in the ordinary category and has been called chloroxylonine. It yields definite salts and behaves with certain reagents in a similar way to the great alkaloid family. Further experiments are being made and further supplies of the alkaloid are in course of preparation, but there appears to be little doubt that it is capable of producing dermatitis similar in character to that produced when the wood from which it is derived comes into contact with the skin.

THE SCOTTISH PRISON COMMISSION.

THROUGH the retirement of Colonel McHardy the chairmanship of the Scottish Prison Commission is about to become vacant, and we trust that the Government will take advantage of this occasion to remove what has long been felt as a grave anomaly in prison administration in Scotland —namely, the absence of a medical member on the Prisons Board. It is somewhat singular that the northern kingdom, which has always enjoyed an enviable fame in psychiatry, should in this respect lag behind England and Ireland, where for some considerable time past there has always been a medical Commissioner of Prisons. The question was carefully considered by Lord Elgin's Departmental Committee on Scottish Prisons in 1902 and a strong recommendation was adopted in favour of following the same policy in Scotland. The committee reported that it was "much impressed by the fact that in the great majority of instances where difficulty has arisen in the management of prisons, questions have been involved which require for their determination experience in medical requirements and

practice, and yet that no member of the Board possesses any medical qualification"; and it expressed very strongly the view that the presence of a medical member would greatly improve the administration and would increase the confidence of the public. It can hardly be doubted that the Government will feel bound to give effect to this authoritative recommendation, and that the vacant position will be filled by one of the distinguished physicians who, we understand, have offered themselves as candidates for it.

OPHTHALMOLOGY AT OXFORD.

THE sixth annual post-graduate course in ophthalmology in connexion with the Faculty of Medicine of the University of Oxford will be held at the Oxford Eye Hospital from July 5th to 17th. On July 15th and 16th there will be a meeting of ophthalmic surgeons, when addresses and demonstrations will be given. The main idea of the course is to demonstrate the whole range of ophthalmology, and the day's work will be divided among lectures, demonstrations, and practical work. It is hoped that some 500 cases will be present for demonstration. Among those who are to give special addresses and demonstrations on the last two days of the course are, besides well-known British ophthalmic surgeons, Dr. Darier of Paris, Professor Deutschmann of Hamburg, Professor Dufour of Lausanne, Professor Greef of Berlin, Dr. Motais of Angers, and Dr. Remy of Dijon. Dr. F. W. Edridge-Green will give a demonstration of some new phenomena connected with colour vision, Mr. N. Bishop Harman will show his new diaphragm test for vision, Mr. A. W. Ormond will give a demonstration of the Mendelian theory in its application to ophthalmology, and Professor Arthur Thomson will give a stereoscopic demonstration of the structure of the eye. The course will be illustrated by the lantern. Fee for the course, £5 5*s*. Gentlemen attending the course will be provided with board and residence at Keble College at the rate of 7*s*. 6*d*. a day during the second week, but during the first week lodgings must be secured. Further particulars can be obtained from Mr. Robert W. Doyne, Margaret Ogilvie's Reader in Ophthalmology in the University of Oxford, 30, Cavendish-square, London, W. Details of the newly constituted diploma in ophthalmology will be found at p. 1727.

"PAINFUL HEELS."

IN a recent issue of the *New York Medical Journal* Dr. I. D. Steinhardt has published a useful paper on a subject which has not received much attention—painful heels. Many patients come under professional care complaining of severe pain and tenderness in the heels on walking, and the nature of the malady is not understood and therefore is not properly treated. A frequent cause of painful heels is acute inflammation of the os calcis with formation of new bone, which is sometimes described as exostosis of the os calcis. Usually there is a history of gonorrhœa, gonorrhœal rheumatism, gout or rheumatism, or traumatism in certain cases of weak feet. Males are more often affected than females. The gonorrhœal form usually occurs between the ages of 18 and 45 years; the gouty and rheumatic at and after the age of 40 years; the form associated with weak feet may occur at any age. In a case of the gonorrhœal form the following changes were found. On cutting into the soft parts of the heel, which in appearance and on palpation showed nothing abnormal, the tissues were found to be œdematous and the muscle discoloured. On the inferior surface of the os calcis the bone was abnormally prominent and rough in the region of the tuberosity. The bone was also very brittle and could easily be removed with a sharp spoon. Some pieces were decalcified and sections were cut. They showed granulation tissue consisting chiefly of spindle cells. From pieces of the bone a culture of the gonococcus was obtained. The adjacent tissues were infiltrated in all directions by broad bands of bone. The process was evidently an ossifying periostitis due to the gonococcus. Osteitis of the os calcis may also be due to other organisms; streptococci and staphylococci have been found. The patient usually complains at first of general pain in the foot, which soon becomes localised in the heel, while over the tuberosity the pain on pressure is exquisite, indeed it is often so great that the patient cannot put his feet to the ground. Radiography shows one or more spicules protruding from the os calcis, and periostitis of the surrounding bone or a much enlarged tubercle with surrounding periostitis. In the gonorrhœal variety treatment of the primary disease will help to cure the osteitis. In the gouty and rheumatic forms these diatheses must be treated. In the traumatic form associated with weak feet strapping may be applied and followed by the wearing of well-fitting plates, but operative treatment may be necessary. For this an incision is made in the middle line of the foot two inches or two and a half inches long, terminating about half an inch behind the tubercle of the os calcis. Retractors are inserted and the exostosis at the bottom of the wound is chiselled away and the bone is scraped with a sharp spoon until the surface becomes smooth and seems healthy. The wound is washed out with normal saline solution and closed without drainage with interrupted catgut sutures. After two weeks the feet may be put to the ground, and after three weeks the patient should be able to walk.

THE King has granted to the undermentioned His Majesty's Royal licence to accept and wear the decorations which have been conferred upon them by His Highness the Khedive of Egypt, in recognition of valuable services rendered by them:—To Mr. Henry Pottinger Keatinge, M.B. Durh., F.R.C.S. Eng., director of the School of Medicine and of the Hospital of Kasr-el-Aini, the Imperial Ottoman Order of the Medjidieh, Second Class; and to Mr. Frank Cole Madden, M.D. Melb., F.R.C.S. Eng., professor at the same School of Medicine, the Imperial Ottoman Order of the Medjidieh, Third Class.

A TELEGRAM from the Governor of Hong-Kong to the Secretary of State for the Colonies stated that 11 cases of plague and 12 deaths were reported during the week ending with the month of May. A telegram from the Governor of Mauritius, received at the Colonial Office on June 4th, states that there were two cases of plague reported during the week ended June 3rd and two deaths from the disease.

MEDICAL GOLFING SOCIETY.—The annual tournament of the Medical Golfing Society will be held at the Burnham Beeches Golf Club on Thursday, June 24th. Play will be 18-holes, match play, *v.* bogey under handicap. There will be three prizes in each of two divisions—the senior competition being for those with a handicap of 12 and under, the junior for those whose handicap is over 12. The "Henry Morris" challenge cup and the Medical Golfing Society's gold medal will be competed for. There will also be a foursome sweepstake in the afternoon. Any person on the Medical or Dental Registers can join on payment of the annual subscription (4*s*.), which includes entrance to the tournament. Entries, accompanied by subscription and giving lowest handicap, should be sent to L. Eliot Creasy, 36, Weymouth-street, London, W., on or before Monday, June 21st. Conveyances will meet trains at Burnham Beeches station (G.W.R.). Cards may be handed in till 8.30 P.M.

INSTRUCTION FOR SCHOOL CHILDREN IN THE PRINCIPLES OF TEMPERANCE.

IT has long been realised by all who give thought to such matters that instruction on the subject of temperance might well be given by the teachers in our national elementary schools as a part of the teaching of the elementary rules of personal health. Hygiene is included as one of the regular subjects in which the students at the training colleges, who intend to become teachers, are now instructed in order to equip them for their future educational duties, and under this heading there would be given very properly information as to the value of food-stuffs, the effects of alcoholic beverages, and the consequences of intemperance to the individual, to the family group, and to the commonwealth. But while there need be no difficulty about instructing the embryo teacher, there has been considerable difficulty in deciding exactly what lines should be pursued by the full-blown teacher when he is asked to impart his knowledge to his pupils. This is the difficulty which the Board of Education is now dealing with.

There has been issued this week from the Board the syllabus of the lessons on temperance which is recommended by the department to be followed by the teachers of the scholars attending our elementary public schools, and the necessity for this syllabus is well explained in a brief prefatory note by Sir Robert Morant. At the present time some of our elementary schools have not on their staff teachers possessing the knowledge necessary to give instruction on temperance, and in order that the scholars might receive such instruction the services have been utilised of missionaries from various societies and organisations, and the classes have been allowed to count towards the period of secular instruction required by the Code. But these peripatetic teachers, though specially qualified to discuss their subject, have not always, says Sir Robert Morant, the particular qualifications required by the Code or any experience of methods of teaching suitable to their audience, while the courses of instruction have not seldom been found inappropriate to the purpose. In these circumstances, the Board of Education has come to the conclusion that an official syllabus should be issued as a model to which all future teaching should conform in general character, and to some extent in detail. We print the syllabus *in extenso* :—

Section I.

EATING AND DRINKING: FOOD AND ITS USE.

1. What things do we eat?
2. The different kinds of food.
   Meats, fats, starches, sugars, salts. Water in food.
3. What is the use of our food? Why food is necessary.
   (*a*) Food is necessary for the growth of the body.
   (*b*) Food prevents the body from becoming thin and wearing away. It repairs waste.
   (*c*) It is from food that we get our strength and power to work.
   (*d*) It is by our food that the body is kept warm.
   (*e*) The working of the mind depends upon the condition of the body. If the body is not properly fed the mind will not work so well.
4. Overfeeding and underfeeding. Too little food is bad for the body; too much food is bad also.
5. The special usefulness of the different kinds of food. Why people eat various kinds of food, and why they are wise to do so.
6. Things which people eat and drink for pleasure. Sweets, cakes, tea, coffee, and cocoa. Some of these things are foods or quench thirst. The value of each. Why people drink tea and coffee.
7. Other beverages.
   Besides these beverages, which are in part useful, people also take for pleasure other beverages, such as beer, wine, spirits. These are not useful in the ways in which our ordinary food, and such things as cocoa and milk, are useful. People often do themselves great harm by taking too much beer, wine, and spirits.
   The chief reason for this is that these beverages contain alcohol and little or no real food-substance.

Children and young people ought never to take alcoholic beverages in any circumstances, unless by a doctor's express order.

Section II.

ALCOHOL.—EFFECTS OF ALCOHOLIC BEVERAGES ON THE BODY.

1. The presence of alcohol in beer, wine, and spirits.
   Not only are beer, wine, and spirits not useful to us in the same way that our ordinary food is useful; they also contain varying proportions of alcohol, which in pure form is injurious to the human body.
2. Some characteristics and uses of pure alcohol.
3. The proportion of alcohol in beer, wine, and spirits.
   It is impossible to drink alcohol undiluted, because of the direct injury and pain it would produce.
   The harmful effects of alcohol are weakened, though not destroyed, when it is mixed with water and other things, as in alcoholic beverages.
4. The drinking of alcoholic beverages may bring about injurious effects and changes in our bodies, which may be considered under the following headings:—
   The effect of alcohol on:—
   (*a*) Growth.
   (*b*) The power of the body to resist disease.
   (*c*) The body's strength and power to work.
   (*d*) The proper digestion of food.
   (*e*) The heat of the body.
   (*f*) The control of the body which is exercised by the brain.
   (*g*) The intelligence and understanding.
5. The effects of excessive drinking of alcohol:—
   (*a*) The man or woman who habitually drinks too much alcohol may become a mental or physical wreck.
   (*b*) Persons who drink in excess do not, as a rule, have long or healthy lives. The evidence of this.

Section III.

EVIL CONSEQUENCES OF INTEMPERANCE TO THE INDIVIDUAL, TO THE HOME, AND TO THE STATE.

(For children over 12 only.)

1. The drinking of alcoholic beverages not only may have bad effects upon the body and mind of the individual, but also may be followed by still more serious consequences—namely, moral injury to himself and great harm to others.
2. The importance of self-control and temperance in all things. Freedom is lost if evil habits are acquired.
3. The personal consequences of excessive drinking of alcohol:—
   (*a*) Waste of money which could be wisely spent or saved. The value of thrift.
   (*b*) Loss of self-respect.
   (*c*) Unfitness for work; loss of employment. Pauperism.
   (*d*) Ill-health; disease. Insanity.
   (*e*) Neglect of duty; moral degradation. Crime.
   (*f*) The ruin of homes; unhappiness and suffering of men, women, and children.
4. The social evils which result from alcoholic excess.
   The habit of alcoholic excess affects not only the individual and his family, but also the State—i.e., the whole of the people. There is wasteful expenditure of money; and paupers, lunatics, and criminals are a heavy burden on the public. The working powers of the people as a whole are impaired, and so the prosperity of the nation itself is undermined.

The syllabus is followed by a series of notes for the use of the teachers, devised to supply them with the information necessary for the elucidation of the catechism to which they are expected to submit their pupils. Under *Section I.* it will be seen that it is intended that the teacher should put questions ascertaining what are the foods in common use in the children's homes, and should explain to them the rough physiology of nutrition. Children will be taught the use of their food and the reason for the employment of the different kinds of food, and will hear also the arguments against the use of alcohol as a food. Under *Section II.* more stress will be laid upon the possibility of alcoholic beverages bringing about injurious changes in metabolism and affecting detrimentally the strength of the body and the power of work, while stress can also be laid under this section upon the effects of excessive drinking of alcohol by reference to the estimated mortality due to diseases owing to this origin. In support of this part of the syllabus the teachers are furnished with tables compiled from the Registrar-General's Decennial Reports showing (1) the average mortality among occupied males (25 to 65 years of age) from alcoholism in various trades over a period of three years (1890–92); and (2) a comparison between deaths from all causes and from alcoholic diseases. A third table is also given showing the expectancy of life (that is, the average future duration of life dated from the age in question): (*a*) in the general population of England and Wales based on the experience of 1891–1900; (*b*) in persons insured in a large number of the principal life offices based on the experience of 1863–93; and (*c*) in various friendly societies and the United Kingdom Temperance and General Provident Institution. The first two tables show the risks run from alcoholism by inn-servants and inn-keepers, and the third shows how much more favourable is the expectancy of life in persons abstaining from alcoholic beverages. The tables, of course, are not intended to be presented to the children. In *Section III.* there are laid down the lines for certain instruction which is not intended to be given to children until they have arrived at the age of 12, and its moral is that the drinking of alcoholic beverages not only may have bad effects upon the body and mind of the individual but also may be followed by moral injury to the drinker, unhappiness to his home, and danger to the State at large.

The notes to the syllabus, which we have thus briefly epitomised, make up an extremely interesting and valuable document. The statements and the inferences can be supported by high authority, the greatest possible care

having obviously been given to the exact form in which the inferences are put, so that while the great physical and moral lessons are clearly brought out, there should be no handle for an accusation either of exaggeration or of faddiness. It goes without saying that a debate could be started over some of the statements made in presenting the economic aspect of the drink problem, but the general propositions that the prosperity of any nation depends upon its workers, and that if a large number of these workers damage their capacity by excess in alcoholic drinks that nation sooner or later will degenerate and fall behind others (being unable successfully to compete with more sober and temperate races) are put in a convincing form. It has been alleged that some of the temperance teaching given in the past which was represented as scientific has, in fact, fallen short of a scientific standard as regards accuracy in stating facts and caution in drawing inferences. "In some cases," says Sir Robert Morant, "it appears that attempts have been made to support the incontrovertible general arguments against the abuse of stimulants by suggesting that alcohol inevitably and invariably has deleterious consequences when taken as a beverage in any condition whatever. The proposed proof of this proposition sometimes included in lectures on temperance given in public elementary schools occupied time that might have been better employed for the purpose of inculcating temperance on broad intelligible grounds and as a scientific argument rested on somewhat precarious foundations." Not a few medical men will endorse and welcome this reasonable pronouncement.

We consider that the Board of Education in drawing up this syllabus, and in thus supplying teachers with the necessary information for the exposition of most important matters, has taken the right course to provide security that the teaching should be both accurate in its statements of facts and suitable in its manner of presentation to the audience. It must, of course, often happen that children who are practically underfed will receive instruction upon the choice of diet, which will create a rather grim situation; and other children will have the faults of their parents made apparent to them in a manner which may make it difficult for them to obey the decalogue. These are, however, matters which must not be weighed against the general good that will accrue to the community if the school children of the nation are taught lessons of self-control and the appalling misery and wastefulness due to the alcoholic habit. We are glad to see the words of warning with which Sir Robert Morant closes his prefatory remarks. "The teacher," he says, "should carefully avoid anything, whether in the details or in the methods of dealing with them, calculated to excite morbid curiosity or fear. Instruction in the subject of 'Temperance' should itself be temperate, and should make a sober appeal to such reasoning capacity as a child possesses and to the ideas of decent self-respecting and dutiful living which every good teacher endeavours to present to and cultivate in the children under his charge."

THE SEVENTH INTERNATIONAL CONGRESS OF APPLIED CHEMISTRY.

WITH the closing of the proceedings on Wednesday last week the impression was left that the International Congress of Applied Chemistry in London had been a conspicuous success. The meeting at all events has served to remind the community of the great importance of chemical science in its application to the arts and industries and to the welfare of the human race. Considerable credit is due to the organisation committee for the smooth way in which the work of the various sections proceeded. It must have cost considerable effort to bring to a satisfactory issue the business of a congress having such a comprehensive subject before it for discussion as applied chemistry. The fact that there are few departments in human affairs which are not affected at some time or other by the application of chemical science rendered the programme of subjects for discussion a necessarily full one. In spite, however, of the situation created by this plethora, the attempts put forward to preserve some system and order succeeded well, and altogether the outcome of the Congress will be an advance in the cause of science and scientific industry.

Pressure on our space last week made it impossible to give anything more than a rapid sketch of the proceedings, although in that sketch prominence was given to subjects which come more or less within the precincts of medical science. This week we conclude our account with reference more particularly to the proceedings in the Sections of Pharmaceutical Chemistry, of Bromatology, and of Hygiene respectively.

PHARMACOLOGY.

Amongst the papers which attracted considerable interest in the Pharmaceutical Chemistry Section was one by Mr. E. M. HOUGHTON, M.D., Ph.C., on a Proposed International Standard for the Physiological Assay of the Heart Tonics of the Digitalis Series. As the result of much painstaking experimental work of a physiological kind, the author is led to the following conclusions: (1) It is impossible to determine the value of the heart tonics of the digitalis series by chemical assays; (2) the toxicity of these products warrants that every effort should be made to present preparations of them as uniform in value as possible; (3) experiments upon animals have demonstrated conclusively that the variation in the physiological action of some of these products is extremely great; and (4) that the section should appoint an international committee to determine and recommend the best method of physiological assay of the heart tonics of the digitalis series and to erect an international standard, a "heart tonic unit" to express the physiological value of the pharmaceutical products of this series. In his paper the author described his method of physiological assay, the result of nearly 15 years of laboratory study as a possible solution of the problems.

"Standardisation" was the theme also of a good paper by Mr. P. W. SQUIRE and Mr. C. M. CAINES, who discussed the important question of uniformity in the strength of potent medicines. In their paper they dealt with some familiar examples calling for inquiry. After some discussion, a motion was carried unanimously that it was desirable that an international inquiry should be instituted with a view of securing: (1) greater uniformity in the commercial supplies of potent drugs and the means for determining the same; and (2) approximation in the pharmacopœias of the world to common standards of activity. This paper received strong support from a paper by Mr. PETER MACEWAN, Ph.C., F.C.S., and Mr. GEORGE P. FORRESTER, which, referring to the variations in the activity of certain toxic drugs, demanded an international inquiry.

In the same section Mr. W. HARRISON MARTINDALE read a very complete paper on the various organic arsenic compounds. He urged further work from the therapeutic point of view. Broadly, it is shown that inorganic arsenic taken internally is slowly eliminated—it remains stored up in the system for a long time—but the same does not appear to be true with regard to the organic compounds which have been used medicinally. The ideal organic arsenic body should pass away quickly from the region of the stomach, but, on the other hand, for the treatment of diseases of the nature of trypanosomiasis and syphilis, a slowly dissolving body would seem to be of importance so as to prolong the action on the organisms. The relation of the constitution of these organic compounds to their therapeutic action was discussed.

An interesting paper on the Toxicity of Acetanilide Mixtures was read by Mr. SEIDEL on behalf of Mr. WORTH HALE. It was shown that in the experiments upon both warm- and cold-blooded animals caffeine was found to exert a fairly marked antagonistic effect so far as the heart-rate is concerned, but it had only very slight action upon the lessened contractile power of the heart muscle. The antagonism is so very imperfect that it is probably of very little value in relieving the heart distress of acetanilide poisoning despite the popular belief in its efficacy. When given to the intact animal (mice and guinea-pigs) it markedly increased the toxicity of acetanilide. On the other hand, sodium bicarbonate was found to exert a greater influence than caffeine in counteracting the depressing effects of acetanilide.

These, with the interesting address given by the president of the section, Mr. N. H. MARTIN, on the History of Applied Chemistry in its Relation to Pharmacy, formed the chief contributions to this section.

BROMATOLOGY.

Standardisation was again the favourite topic of discussion in this section, and it was interesting to hear the views as to the efficacy of the food laws of various countries as related

by their representatives. Dr. W. H. WILEY, for example, read a paper on Food Control in the United States. He described the system of adminstration in that country. After giving a detailed sketch of the national laws relating to foods he passed on to the State laws and said that practically all the States had laws of some kind bearing upon the control of foods. There were also many municipal laws applying to the inspection of restaurants, bakeries, dairies, &c., and to the sale of milk. He regarded the system of food control in the States as effective, and emphasised the value of a legislative authority deciding upon standards of purity.

Mr. F. W. BECK, solicitor to the Grocers' Federation, discussed the same subject from the point of view of this country, and pointed out that the objects which repressive legislation with reference to foods should have in view are the ensuring of wholesomeness and the prevention of fraud; it should safeguard the consumer, firstly, against the presence of dangerous and noxious ingredients, and, secondly, against the deceit and dishonesty of misdescription. The fixing of standards, he thought, should not be used for mere equalisation of chemical constituents in foods, and still less should it be used for the purpose of establishing or maintaining one branch of industry at the expense of, or to the detriment of, another. From the public point of view he doubted whether the advantage gained in one direction by the fixing of standards for natural products is not more than counterbalanced in another by the lowering of the general average quality. He instanced, amongst other things, the depreciatory effect of standards upon the quality of milk and butter. Referring to the question of preservatives he drew a distinction between their use and abuse, and concluded by proposing what the constitution should be of a Board of Reference which from time to time might effectively deal with these matters.

On the other hand, Mr. C. G. MOOR and Mr. W. PARTRIDGE urged that from the administrative point of view the setting up of standards would secure uniformity. They suggested that in the case of milk the public analyst in every district should publish the percentage of fats contained in the milk supplied by the different dealers, whose names should be attached to the report.

Mr. N. P. BOOTH said that the absence of a legal standard for chocolate meant that while the sale of certain chocolate preparations was prohibited in some other countries these wares were permitted to come without restriction to the English market. The actual amount of cocoa in chocolate varies enormously, and sometimes it was hardly present at all, and still the stuff was sold as chocolate.

The section seemed to be of the opinion that in the work of fixing standards the collaboration of manufacturers should be invited.

SYNTHETIC CHEMISTRY.

There were a number of papers on synthetic chemistry, although few of them related to synthetic remedies. In generalising upon the subject Professor PATERNO of Rome pointed out how tortuous and indirect after all was the way by which the chemist synthesised a substance as compared with the great simplicity of Nature's methods. He thought, however, that organic synthesis would be made more direct as our knowledge advanced in regard to the changes effected by the action of light, of micro-organisms, of enzymes, and of catalytic substances.

Professor HALLER of Paris referred to the influence upon certain branches of commerce which the discovery of the synthesis of camphor may have. He said that in regard to alizarin and indigo, science and industry had incontestably got the better of nature. The cultivation of madder had completely disappeared in the south of France and artificial indigo was a menace to the immense and numerous plantations of India, Java, and Guatemala. It would be rash, he added, to say that the same thing was going to happen in the case of camphor, for it was to be remembered that the fundamental substance used in producing artificial camphor —namely, the essence of turpentine—was limited in supply, and prices fluctuated considerably.

HYGIENE.

In the Hygienic Section Dr. J. GROSMANN of Manchester drew attention to the present mode of sewage sludge disposal, which, he said, was not only objectionable from a hygienic point of view, but was absolutely against all economic principles. At Bradford a process had been inaugurated by which an appreciable amount of fat was obtained from the sludge, which found a market at about £7 per ton. The residual substance after the separation of this grease by distillation was a fine brownish-coloured powder without odour and sterilised. It showed on analysis a good manurial value, and was suitable for mixing with other fertilisers for agricultural purposes. He quoted the instance of a town of 100,000 inhabitants in regard to the economy of the process. In such a case the cost of working up the sludge would amount to £2610 per annum, whilst he calculated that the amount realised by the sale of the products would be over £5000, leaving a margin of close on £2500.

In the same section an interesting paper on the Chemical Evidence of Slight Sewage Pollution of Sea-water was contributed by Mr. H. A. KENWOOD and Dr. F. N. KAY MENZIES. The evidence suggested is of importance in view of the question as to whether sea bathing in water contaminated with human excreta involved risk to the health. There is also the case of the pollution of shell-fish. They found that the figures giving the free and saline ammonia furnish the only trustworthy chemical guide to the lesser degrees of animal contamination of sea-water; also that delicate corroborative evidence may sometimes be obtained from the presence of nitrites and phosphates; but the complete absence of oxidised nitrogen is compatible with recent pollution, and it is not always possible to obtain a definite reaction for phosphates when the contamination is marked. The free and saline ammonia figure remains of all the available tests hitherto suggested the most trustworthy and the most delicate, and they suggest that an ammonia figure much exceeding 0·002 per 100,000 is certain evidence of the sewage contamination of sea water.

In a paper by Mr. J. E. PURVIS, Mr. G. H. MACALISTER, and Mr. E. MINNETT experiments were quoted to prove that it was quite unsound to pour sewage directly into the sea or even into a tidal estuary. There was little doubt that the salt of the sea stopped the purifying action of the microbic scavengers and hence putrefaction was prolonged and the discharge remained for some time offensive. Ultimately offensive matter was probably destroyed by the oxygen dissolved in the sea water. It was urged that some preliminary treatment should be adopted before sewage was discharged into the sea in order to expedite the destruction of the complex compounds.

The sewage of the motor-car, as the fumes may be called, was a matter also dealt with in the Hygienic Section. M. FRENKEL proposes to introduce a deodoriser consisting of a tube lined inside with platinised asbestos or porcelain. A mixture of air and motor fumes passed through such a tube was automatically burnt, the catalytic cell in the tube becoming incandescent in the process. The writer said that the acrid smell from motor-car engines was due to acrolein formed by the action of carbon monoxide on the unsaturated hydrocarbons.

The subject of poisonous industries was discussed in the same section. In his address to the section Sir THOMAS OLIVER said that occupation should be a means of life and not a cause of death. He was optimistic enough to believe that what chemistry had done for lucifer matches it could accomplish for pottery and paint, so that certain industries which had hitherto dragged in their trail a considerable amount of suffering and distress should become a means of healthy living.

Professor P. BEDSON of Newcastle also contributed a paper on a subject connected with dangerous occupations—namely, the Inflammability of Coal-dust. He described a method and apparatus for the practical study of the question. It was found that coal-dusts differed very materially in their inflammability. The dust from brown coal was found to be the most readily inflamed, while bituminous coal-dust containing a high percentage of volatile matter came next in order of inflammability. Finely divided charcoal does not inflame under the conditions of the test. Damping the dust was found to raise the ignition point considerably and an admixture of silica with the coal-dust had a similar effect.

In the above and in the previous notes in our last week's issue of the proceedings at this most interesting and valuable Congress we have dealt mainly with medical matters. We have necessarily left out all reference to the highly technical papers which were discussed on such subjects, for example, as explosives, metallurgy and mining, the starch and sugar industries, the colour industry, and so forth, the importance of which, however, will be recognised.

PROPOSED LEGISLATION ON MILK-SUPPLIES:

I. MR. JOHN BURNS'S BILL.
II. LORD PENTLAND'S BILL.

OUTBREAKS of acute illness have so frequently been traced to the use of contaminated milk that the prevention of these risks has become an important question in public hygiene. The pathogenic germs are usually introduced by fæcal matter having found its way into the milk either through mere uncleanliness or through dilution with sewage-polluted water, and there is unfortunately no means of discovering the nature and extent of the mischief until some of the consumers are taken ill. Another form of contamination depends on the presence of tubercle bacilli due to the teats or udder of a cow being affected with tuberculous disease. Most farmers would see no reason for getting rid of such a cow as long as her yield was up to the average quantity, and there is therefore ample justification for the compulsory inspection of milch cows contemplated in the two Milk and Dairies Bills recently submitted to Parliament. One of these, applicable to England, Wales, and Ireland, has been introduced by the Right Hon. John Burns, President of the English Local Government Board; while the other, applicable to Scotland only, has been introduced by Lord Pentland. The main objects of both Bills are to provide for (1) the effective registration of dairies; (2) the inspection of dairies and the examination of cows therein; and (3) the prohibition of the supply of milk from a dairy where such a supply has caused, or would be likely to cause, infectious diseases, including tuberculosis.

I. MR. BURNS'S BILL.

Mr. Burns's Bill states that the Board of Agriculture and Fisheries will in connexion with this Bill issue an order under the Diseases of Animals Act, 1894, dealing with the notification of tuberculosis in cattle and the inspection, isolation, and slaughter of tuberculous cattle, and the giving of compensation in appropriate cases. The principal portions of this Bill possessing a medical interest are as follows. The current numbers at the beginning of each section or clause now quoted are the same as in the original text, and summaries of clauses not printed verbatim are in italics.

I.—(1) A person shall not carry on the trade of dairyman in any dairy within the district of a sanitary authority unless he and the dairy are registered with the sanitary authority in accordance with this Act and the orders made thereunder, and if he does so he shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding five pounds. .....

(2) The sanitary authority may remove any dairy from the register, or may refuse to register any premises as a dairy if—

(*a*) the premises become or are unsuitable to the purposes of the business carried on or proposed to be carried on therein. .....

(3) On the second or subsequent conviction of a dairyman of an offence against this Act or the orders made thereunder the court by which he is convicted may ..... order that the name of the offender be removed from the register of dairymen either absolutely or for such period as may be specified in the order.

II.—(1) If the milk from any dairy is being sold or used for human consumption within the district of any sanitary authority, the medical officer of health for that district shall, whether the dairy is situate within or without the district, have power at all reasonable hours to enter and inspect the dairy, and if accompanied by a veterinary inspector or some other properly qualified veterinary surgeon, to inspect the animals therein:

Provided that if the dairy is not situate within the district of the sanitary authority the medical officer of health shall not be empowered so to enter and inspect the dairy unless he has evidence that infectious disease is caused, or is likely to be caused, by consumption of the milk supplied from the dairy, and shall, before inspecting the dairy, give notice of the intention to do so to the clerk and medical officer of health of the district in which the dairy is situate.

(2) If on any such inspection the medical officer of health or the veterinary inspector or surgeon has reason to suspect that any cow in the dairy is suffering from tuberculosis with emaciation or from tuberculosis of the udder, or is giving tuberculous milk, he may require the cow to be milked in his presence and may take samples of the milk, and the milk from any particular teat shall, if he so requires, be kept separate and separate samples thereof furnished.

(3) Every dairyman and the persons in his employment shall render such reasonable assistance to the medical officer of health or a veterinary inspector or veterinary surgeon as he may require for all or any of the purposes of this section, and any person refusing such assistance or obstructing such medical officer of health or veterinary inspector or veterinary surgeon ..... shall on summary conviction be liable to a fine not exceeding five pounds.

(4) If on any such inspection the medical officer of health is of opinion that infectious disease is caused, or is likely to be caused, by consumption of the milk supplied from the dairy, or of the milk of any particular cow kept therein, he shall report thereon to the sanitary authority, and to the Local Government Board. .....

(5) On the receipt of such a report the sanitary authority may serve on the dairyman notice to appear before them within such time, not less than twenty-four hours, as may be specified in the notice, to show cause why an order should not be made prohibiting him ..... from supplying for human consumption ..... any milk from the dairy or from any particular cow kept therein until the order has been withdrawn. .....

III.—(1) If a person—

(*a*) knowingly sells, or offers or exposes for sale, or suffers to be sold or offered or exposed for sale, for human consumption or for use in the manufacture of products for human consumption ..... tuberculous milk or the milk of any cow which is suffering from tuberculosis of the udder, or which is emaciated from tuberculosis, he shall for each offence be liable on summary conviction to a fine not exceeding ten pounds, unless he proves that the milk has been boiled or otherwise sterilised.

(2) Any dairyman after he becomes aware that any cow in his dairy is suffering from tuberculosis with emaciation, or from tuberculosis of the udder, or is giving tuberculous milk, shall so far as is practicable not keep that cow or permit it to be kept in any field, shed, or other premises along with other cows in milk, and if he does so shall be liable on summary conviction to a fine not exceeding five pounds.

VI.—(1) The Local Government Board, after consultation with the Board of Agriculture and Fisheries, may make such general or special orders as they think fit for the purpose of carrying this Act into effect, and in particular with respect to all or any of the following matters:—

(*a*) The registration with the sanitary authority of dairies and dairymen .....;

(*b*) The inspection and examination of dairies and cows therein;

(*c*) The lighting, ventilation, cleansing, drainage, water-supply, floor space, air space, and construction of floors, of dairies;

(*d*) The prevention of impurities in milk intended for human consumption and the cleanliness of vessels used for or containing such milk;

(*e*) The measures to be taken for cooling milk and otherwise for protecting milk against infection or contamination;

(*f*) The prohibition or regulation of the use of preservatives in milk;

(*g*) The manner of conveyance of milk intended for sale for human consumption and the identification of churns and vessels used for the conveyance of such milk;

(*h*) The prohibition or regulation of the mixing of the milk in one such churn or vessel with the milk in another such churn or vessel;

(*i*) The labelling of the receptacles of milk for sale for human consumption where the milk is sold otherwise than in its natural state; .....

VII.—A warranty or invoice shall not be available as a defence to any proceedings under the Sale of Food and Drugs Act, 1875 to 1907, where the article in respect of which the proceedings are taken is milk.

IX.—(1) The sanitary authority of any district (other than a rural district) with a population of fifty thousand or upwards may, subject to regulations under this section, establish and thereafter maintain depôts for the sale of milk specially prepared for consumption by infants under two years of age, and purchase and prepare milk and provide such laboratories, plant, and other things ..... as may be necessary for the purposes of this section.

The provision shall extend to any district (other than a rural district) with a population of less than fifty thousand but not less than ten thousand, if the sanitary authority of the district make an application for the purpose to the Local Government Board and the Board consent. .....

X.—*Enforcement of duties of local authorities.*

XI.—*Service of notices.*

XII.—*Expenses of local authorities.*

XIII.—*Provisions as to offences.*

XIV.—(1) In this Act—

The expression "dairy" includes any farm, farmhouse, cowshed, milk store, milk shop, or other place from which milk is supplied or in which for purposes of sale or manufacture into butter or cheese milk is kept or used. ..... The expression "infectious disease" means small-pox, cholera, diphtheria, membranous croup, erysipelas, tuberculosis, the disease known as scarlatina or scarlet fever, and the fevers known by any of the following names: typhus, typhoid, enteric, relapsing, continued, and includes any other disease prescribed by an order made by the Local Government Board under this Act. .....

XV.—(1) The powers and duties of metropolitan borough councils as sanitary authorities with respect to the registration of dairymen shall be exercised and performed subject to any by-laws which may be made for the purpose by the London County Council.

In the event of the Bill becoming law during the present session of Parliament the intention is that it shall come into operation on Jan. 1st, 1910. It makes no reference to the impoverishment of milk by dilution or skimming and does not modify the provisions of the Food and Drugs Acts except as regards the force of warranties.

II. LORD PENTLAND'S BILL.

In Lord Pentland's Bill the principal portions possessing a medical interest are as follows. The current numbers at the beginning of each clause now quoted are the same as in the original text. Summaries of clauses not quoted verbatim are printed in italics.

I.—This Act shall extend to Scotland only, and shall come into operation on the first day of January one thousand nine hundred and ten.

II. *Definitions of the words dairy, dairyman, and milk.*

III. *Appointment of veterinary inspector or veterinary surgeon (not a veterinary inspector) by the local authority.*

IV.—(1) It shall be the duty of the medical officer of health or other officer authorised by the local authority for the purpose from time to time, and once at least in every year, to inspect every dairy in the district and report to the local authority not later than the first day of March in every year whether such dairy is in conformity with this Act and the by-laws made in terms thereof.

(2) It shall be the duty of the veterinary inspector from time to time and once at least in every year to inspect the cattle in every dairy in the district and report to the local authority the result of every such inspection. .....

V.—(1) It shall not be lawful for any person to carry on the business of dairyman in any premises, unless such premises have been licensed by the local authority. .....

XI. Every dairyman who has in his dairy any cow which is apparently suffering from tuberculosis with emaciation, or from tuberculosis of the udder, or from any sore on the teats accompanied by suppuration, or from any disease liable to infect or contaminate milk, or any cow which to his knowledge is giving tuberculous milk, shall forthwith give written notice thereof to the local authority stating the situation of the dairy.

XII. It shall not be lawful for any person knowingly to consign, sell, offer, or expose or keep for sale for human food the milk of any cow apparently suffering from tuberculosis with emaciation, or from tuberculosis of the udder, or from any sore on the teats accompanied by suppuration or bleeding, or from any disease liable to infect or contaminate the milk, or of any cow which to his knowledge is giving tuberculous milk.

XIII. *Diseased not to be kept with healthy animals.*

XIV. If any person resident at or employed in connexion with any dairy, or who resides in the same house as any person so employed, shall suffer from any illness attended by sore throat or diarrhœa, or shall show symptoms of any infectious disease, the dairyman, on becoming aware thereof, shall forthwith report to the medical officer of health for the district the existence of such illness.

XV. The medical officer of health of the district in which milk is produced shall with all practicable speed furnish to the medical officer of health of the district to which the milk is consigned, or in which it is sold or offered or exposed or kept for sale for human food, information regarding all cases of infectious disease of which he is cognisant occurring amongst the persons employed or in the families of persons employed, or amongst the persons residing at the dairy from which the milk is consigned.

XVI.—It shall not be lawful for any dairyman—

(*a*) to allow any person suffering from or showing symptoms of any infectious disease, or having recently been in contact with a person so suffering or who resides in a house where such disease exists, or is suffering from any suppurating sore or from sore throat or diarrhœa, to milk cows or to handle milk vessels or in any way to take part or assist in the conduct of the trade or business of the dairyman; or

(*b*) if himself so suffering or showing symptoms or having recently been in contact or residing as aforesaid, to milk cows or handle milk vessels or in any way to take part in the conduct of his trade or business

until in each case all danger of the communication of infection to the milk or of its contamination has ceased.

XVII.—(1) If the medical officer of any district has evidence that any person in the district is suffering from any infectious disease or any illness attributable to milk supplied within the district from any dairy situated within the district, or that the milk from any such dairy is likely to cause any such disease or illness to any person residing in the district, such medical officer shall visit the dairy, and the medical officer shall examine the dairy and every person engaged in the service thereof, ... and the medical officer shall forthwith submit to the local authority a report of the results of his examination. .....

(2) If the medical officer of any district has evidence that any person in the district is suffering from any infectious disease or any illness attributable to milk from any dairy without the district, or that the milk from any such dairy is likely to cause any such disease or illness to any person residing in the district, such medical officer shall forthwith intimate the same to the medical officer of the district in which such dairy is situated, with a statement of the evidence in his possession, and the last-mentioned medical officer shall be bound, as soon as practicable, to examine the dairy and every person engaged in the service thereof or resident upon the premises. .....

(3) The local authority of the district in which the dairy is situated shall meet forthwith and ..... shall either make an order requiring the dairyman not to supply any milk from the dairy until the order has been withdrawn by the local authority or resolve that no such order is necessary. .....

XVIII.—*Dairymen to produce list of customers and invoices.*

XIX.—*Power to enter and inspect dairies, &c.*

XX.—*Power to take samples of milk.*

The remaining seven clauses of Lord Pentland's Bill relate chiefly to appointment of committees, recovery of penalties, and questions of expenses. This Bill contains no reference to warranties or to the formation of depôts for the preparation of milk for infants. Increased powers given to sanitary authorities on the lines proposed in these two Bills will undoubtedly lead to an improvement in the quality of the commercial milk-supply.

THE ROYAL INSTITUTE OF PUBLIC HEALTH.—The Harben lectures for 1909 will be delivered by Professor R. Pfeiffer, M.D., director of the Hygienic Institute, Breslau, in the lecture room of the institute, 37, Russell-square, W.C., on Monday, June 21st, Wednesday, June 23rd, and Friday, June 25th, at 6 P.M. Lecture I., The Importance of Bacteriolysins in Immunity; Lecture II., Endotoxins and Anti-Endotoxins; Lecture III., The Problem of Virulence. Fellows and members, and others interested, are cordially invited to attend.

THE CARDIFF MEDICAL SOCIETY.

THE VISIT OF DR. LUCAS-CHAMPIONNIÈRE: PRESENTATION TO MR. J. LYNN THOMAS AND MR. H. E. SKYRME.

Dr. J. Lucas-Championnière, the famous French surgeon and President of the International Society of Surgery, was a visitor last week to Cardiff, the occasion being to deliver an address to the Cardiff Medical Society, and also to make a presentation to Mr. Lynn Thomas and Mr. Skyrme as the result of the subscriptions from the medical profession towards the costs and damages sustained by those gentlemen in the protracted litigation which has so often been referred to in our columns.

The Meeting of the Cardiff Medical Society.

At the meeting of the Cardiff Medical Society on Friday afternoon, June 4th, Dr. Lucas-Championnière was received by the President of the society, Dr. W. B. Crawford Treasure, who spoke his words of welcome and appreciation in excellent French. The distinguished guest was accompanied by the Lord Mayor of Cardiff, Alderman Lewis Morgan, whose guests he, Madame Lucas-Championnière, and their daughters were. The address was delivered in the theatre of the Engineers' Institute, which was crowded, for the subject, "The Modern Treatment of Fractures," was one peculiarly the lecturer's own, and he spoke upon it, with the fulness and freedom which can only come from intimate knowledge. Moreover, the topical interest of such an address was very great considering all the circumstances which had brought together the audience.

At the conclusion of the address Mr. E. TENISON COLLINS proposed a vote of thanks to the lecturer, with appropriate allusions in French to Dr. Lucas-Championnière's skill alike as surgeon and orator; while Dr. T. D. GRIFFITHS, who seconded the vote of thanks, expatiated on the improved prospects of sufferers from fractures as the doctrines of mobilisation in their cure became more widely adopted. Mr. R. CLEMENT LUCAS also supported the vote, congratulating the Cardiff Medical Society on securing the honour of a visit from the great French surgeon "with the elongated appendix to my own name."

The Anglo-French Society of Cardiff.

After this meeting Dr. Lucas-Championnière went to a reception given in Park Place by the Cardiff Anglo-French Society, when Mr. W. E. THOMAS, President of the society, offered a cordial welcome to the distinguished guest of the city, dwelling on the fact that the object of the society was to promote a good understanding between France and Great Britain. Among those present were M. Barbier, the ex-President, M. Wideman, the Vice-President, and Mr. W. P. Seward, secretary of the society, Dr. Treasure, Mr. F. P. S. Cresswell, the Lord Mayor of Cardiff, and Mr. A. T. Griffiths, President of the Cardiff Chamber of Commerce.

The Annual Dinner of the Cardiff Medical Society: Presentation to Mr. Lynn Thomas and Mr. Skyrme.

The annual dinner of the Cardiff Medical Society was held at the Royal Hotel, Cardiff, on the same evening, and a very large number of medical men recognised by their presence the unusual interest of the occasion. It was well known that Dr. Lucas-Championnière's visit had for its object, in addition to the delivery of an address, the presentation to Mr. Lynn Thomas and Mr. Skyrme of the Fund towards which medical men all over the world had subscribed. The dinner was presided over by Dr. Treasure, the President of the society, and among the guests present, in addition to Dr. Lucas-Championnière and his wife and daughters, were the Lord Mayor of Cardiff and the Lady Mayoress, Mrs. Treasure, Mrs. Lynn Thomas, Sir Alfred Thomas, M.P., Sir T. Marchant Williams, Mr. Clement Lucas (senior surgeon to Guy's Hospital), Mr. E. H. Griffiths, F.R.S. (Principal of the University College, Cardiff), Mr. Edmund Owen (Chairman of the Council of the British Medical Association), Dr. Dawson Williams (Editor of the *British Medical Journal*), and Dr. S. Squire Sprigge (Editor of THE LANCET). The usual loyal toasts having been drunk, Dr. Treasure submitted, speaking this time in English, the toast of "Our Illustrious Guest, Dr. Lucas-Championnière," and bore brief but eloquent testimony to the work which Dr. Lucas-Championnière had done alike as a surgeon, an operator of remarkable

skill and individuality, and a pioneer in France in the spread of the teaching of Pasteur and Lister.

Dr. LUCAS-CHAMPIONNIÈRE, who was received with great enthusiasm, briefly returned thanks to the assembled company for their reception of him and his family, and to the Lord Mayor and Lady Mayoress whose guests he, Madame Lucas-Championnière, and their two daughters were. He humorously pleaded old age as an excuse for not making a speech.

Mr. WILLIAM SHEEN, honorary secretary of the Lynn Thomas and Skyrme Fund, then made a brief statement as to the constitution and results of the Fund. He stated how the action in which Mr. Lynn Thomas and Mr. Skyrme were involved arose as far back as 1904. The first trial was in December, 1905, and the second in November, 1906. The plaintiff, who claimed £2000 damages, was awarded £100, but as the verdict carried with it costs the expense to the defendants amounted to such a total that after taxation, and after a contribution from the Medical Defence Union of over £900, there still remained to be paid £3200. Following a medical dinner which was held at Cardiff within a few days of the second trial, when about 130 medical men emphatically expressed their sympathy with the defendants, an appeal was made, and within a period of four months there was collected for a re-imbursement fund £1781. The result was that Mr. Lynn Thomas and Mr. Skyrme would receive about £800 each towards the expenses which they had incurred. The money had been subscribed by some 2000 medical men all over the country, no less than 200 being subscriptions of 2*s.* 6*d.*

Mr. EDMUND OWEN, in introducing Mr. Lynn Thomas and Mr. Skyrme to the presenter of the testimonial, congratulated all those responsible for the gathering upon its great success. In a manner which obviously went home to his hearers he dwelt upon the splendid way in which Mr. Lynn Thomas had stood by Mr. Skyrme. This fact had been recognised by the medical profession, and he felt that both Mr. Lynn Thomas and Mr. Skyrme had come well through a painful ordeal, and that the verdict of the courts was not that of their fellow practitioners.

Sir ALFRED THOMAS and Mr. MANSELL MOULLIN having also spoken in testimony of the personal worth of those who were about to receive the testimonial, Mr. Lynn Thomas and Mr. Skyrme, amidst much applause, walked up the hall arm-in-arm to where Dr. Lucas-Championnière sat on the right of the chairman, and received from him the cheques resulting from the fund.

Mr. LYNN THOMAS spoke first in acknowledgment of the presentation. He declared that the event would for ever be memorable to him as proving to him that he had retained the confidence of his fellows and bringing with it the assurance that an invisible hand would support members of the medical profession under wrongful accusations. He returned the warmest thanks to Dr. Lucas-Championnière for his presence there that evening, to Mr. William Sheen for his devoted labour in organising the fund, and to all those who had subscribed to it. Mr. SKYRME spoke in a similar vein, pointing out also that the issue of this case, in support of which the Medical Defence Union had paid no less a sum than £928, had been that both that society and the London and Counties Medical Protection Society had now made arrangements with insurance companies whereby, in consideration of a small annual subscription, the payment of the damages and costs in such actions as those in which he and Mr. Lynn Thomas had been involved would be paid up to a certain amount by the insurance companies.

Dr. D. R. PATERSON then proposed "The Health of the Visitors," to which the LORD MAYOR of Cardiff, Dr. DAWSON WILLIAMS, and Dr. SQUIRE SPRIGGE responded.

The LORD MAYOR having warmly expressed his pleasure both at welcoming Dr. Lucas-Championnière to Cardiff and at being present on an occasion so gratifying to Mr. Lynn Thomas, Mr. Skyrme, and the medical profession generally,

Dr. SQUIRE SPRIGGE said that as the significance of the meeting had already been so eloquently indicated by previous speakers he would confine his words to one particular point—viz., the manner in which the appeal to the profession was made. That manner was wholly admirable. The statement of the case in the medical press was studiously fair, and every point made was, or could be, vouched for by high surgical opinion. The original letter of appeal was based on broad grounds, without a touch of bitterness or personal recrimination in it, was signed by names eminent in the medical world as professors, consultants, and leaders generally, and received a remarkable scientific endorsement from the continent and the United States. The success of the movement was assured by the manner in which it was inaugurated no less than by the righteousness of the cause advocated.

Dr. DAWSON WILLIAMS said that the movement which reached its final stage on that occasion owed nothing of its success to personal considerations. It was a movement to vindicate the right to freedom of thought. The claim to that right was no new thing, for it had led to the foundation of the mediæval universities, but it was appropriate enough that this most recent defence of the principle should have originated in Wales, for the people of the Principality had in comparatively recent times been impelled, by a punctilious adherence to that principle, willingly to make many sacrifices. In the exercise of the medical art freedom of thought implied freedom to act for the best, according to the best knowledge of the day. In conclusion, he said that he was commissioned to state that Dr. E. Rayner, treasurer of the British Medical Association, had intended to be present, but was detained in London by pressure of business. Dr. H. Davy, too, who when President of the Association, had taken a warm interest in the initiation of the movement, was also unfortunately detained at the last moment.

After the health of the chairman and secretaries of the dinner, which was in every way a most successful function, had been duly drunk the meeting dispersed.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION AND OTHER FORMS OF TUBERCULOSIS: EXHIBITION AT WHITECHAPEL.

AN exhibition organised by this association was opened, as we have already announced, by Mr. John Burns, the President of the Local Government Board, on June 2nd at the Art Gallery, High-street, Whitechapel. The object of the exhibition, which is chiefly of a popular and educational character, is to bring home to the people the nature of tuberculosis, the extent of its ravages, and the possibility of its prevention and cure. To this end, popular lectures, homely talks, and lantern demonstrations are given from time to time during the period which the exhibition remains open—namely, till June 19th—and no charge is made for admission. The success which follows such exhibitions has been proved in America, and also in Ireland by the campaign organised by Lady Aberdeen, and the country owes a debt of gratitude to the National Association for its present exhibition and for its determination to carry on the work throughout the Kingdom.

On entering the vestibule of the exhibition attention is immediately arrested by the large posters of the association with the heading "Symptoms of Early Consumption." These posters state that consumption is curable in the majority of cases if taken in hand early, and after detailing the symptoms which may point to consumption exhort sufferers to take prompt medical advice. It is to be hoped that the crowds, among whom are many working men and women, who attentively peruse these excellent posters, will profit by the advice given. Almost directly inside the doors of the exhibition, the walls of which are covered with maps showing the statistics of tuberculosis and photographs of unhealthy and overcrowded areas, are two models of a one-roomed tenement as it exists in London. The first displays its furniture—if the tatterdemalion bed, the washstand without a basin, and the crazy chest of drawers can be so designated—without an attempt to conceal its failings or repair its defaults. The actual dwelling which the full-sized model represents was occupied by four people—father, mother, and two children—and darkness and dampness are its chief features. The next model shows the same room, but intelligence and a feeling for cleanliness and decency have now transformed it into an inhabitable, nay, an attractive dwelling. Gone are the paper-patched windows, and where there was darkness, inevitably accompanied by stench and disease, there is now light, the old

furniture wears a new aspect, and we feel that there is also an atmosphere of health in the general cleanliness and tidiness. Near to this exhibit are rough drawings showing the right and the wrong way to sweep a floor. One picture shows a woman sweeping a floor on which sits a baby, while the dust which the sweeper is raising with her broom almost chokes the child. The other shows the broom enveloped in a damp cloth and the child is playing happily without being subjected to the risk of disease from infected dust. Of course, it would be better if the child were taken out of the room altogether while sweeping operations were in progress, but this exhibition is meant to be practical, and those who manage it know that in some of the dwellings of the poor this might not be possible. "How to Cough" and "How Not to Cough" are other effective pictures. The one shows the bacilli-laden moisture from a consumptive patient infecting another person at a distance of 25 feet, and the other the same patient coughing with his hand before his mouth, afterwards spitting into a piece of paper which he crumples up and throws into the fire. Not far off is a model cradle made out of a banana box with hammock mattress of unbleached calico, cretonne drapery, and muslin covering. This easily and cheaply made contrivance is a direct answer to the statement that the poor cannot afford cradles; the idea is to this extent far superior to the employment of a drawer—the usual substitute for a cradle—in that all the drawers which poor women have are generally badly wanted. This contrivance, which is similar to one shown in connexion with the Second International Congress of School Hygiene,[1] was sent by the Marylebone Health Society, which also exhibits a cheap apparatus for sterilising milk. All of these tangible and visible things have a more potent effect upon the minds of the really poor or ignorant than the scientific part of the exhibition, and nothing but good can come of this somewhat sensational way of proving to the populace that many features of daily life are dangerous. The exhibition of various kinds of food with notes on their dietetic value should also serve a useful purpose in the education of those whose daily fare is too often prompted merely by custom and who have never given thought to the economy of their food.

A special section is devoted to tuberculosis in children, and one of the most interesting exhibits in this department is a large model of an open-air school designed by Dr. Frederick Rose, assistant educational adviser to the London County Council. An eight-page pamphlet giving an account of the nature and scope of open-air schools, and details and estimates of the model can be obtained at the pamphlet stall in the exhibition. This model was originally shown at the Country in Town Exhibition held at Whitechapel in 1908.[2] The institution known as Lord Mayor Treloar's Cripple Home and College at Alton is represented by photographs showing how tuberculosis in children is treated, and the methods adopted in other institutions, including the Alexandra Hospital and the Salop Convalescent Home, are also shown in a similar manner and by models. One end of the main room of the exhibition building is fitted up as a ward of the Royal Victoria Hospital for Consumption at Craigleith, Edinburgh, and there is also a model showing the arrangements of the buildings and grounds of this institution. The hospital is connected with the Royal Victoria Dispensary for Consumption, which was started in 1887 with the object of combating tuberculosis and of affording a central institution towards which persons suffering from the disease might be directed. Sanatoriums of various kinds are well represented, and the models include the Seaforth Sanatorium, the Maitland Cottage Sanatorium at Peppard Common, the Frimley Sanatorium, and the Kelling Sanatorium, the last model being constructed by a patient. Mention here should also be made of the models illustrating progressive overcrowding as a cause predisposing to consumption and its spread, which have been constructed by Mr. R. Sykes, R.I.B.A., and lent by Dr. John F. J. Sykes. The Huddersfield exhibit of models of back-to-back houses, old and new type, is also instructive.

An important development of the treatment of tuberculosis in sanatoriums is the graduated system of work for the patients, and many of the sanatoriums represented show photographs of the system adopted. Actual specimens of manufacture by the patients are also displayed. By the Victoria Home for Invalid Children, Margate, some specimens of wool garments are shown, while the St. Vincent's Cripples' Home show photographs of the inmates at work knitting, tailoring, and brush-making. Specimens of brush work are exhibited by the St. Hugh's Cripples Home. From the Royal Victoria Hospital for Consumption at Craigleith come pictures the patients engaged in work of many kinds, domestic, industrial, and agricultural. The photographs and actual specimens of work done by the patients in the Blencathra Sanatorium, Threlkeld, form a most interesting and instructive exhibit, as do also the series of photographs shown by the Frimley Sanatorium. This latter institution includes in its exhibit spades and other implements graduated in weight and size in accordance with the strength of the patients using them. The work done at King Edward VII. Sanatorium at Midhurst is also shown photographically, and the National Association for the Establishment and Maintenance of Sanatoria for Workers Suffering from Tuberculosis at Benenden, the Inverness-shire Sanatorium, and the Daneswood Sanatorium for the Jewish Poor illustrate the work of the patients in similar ways. This feature of the exhibition is one which requires the earnest and attentive study of all who are in any way concerned in the management of sanatoriums. The exhibits are necessarily somewhat scattered about in different parts of the exhibition, but a special study of the subject can be easily made with the aid of the catalogue.

A small room is set apart as a pathological section. Here are specimens of the liver, lung, and udder of the cow affected with tuberculous disease, lent by Dr. E. W. Hope from the public health department of Liverpool. Similar specimens, together with illustrations of infected and dirty milk, are lent by Professor S. Delépine from the Manchester University, while Professor G. Sims Woodhead shows a large number of bottle specimens from the Humphry Museum of the University of Cambridge. These are mostly from the human subject. The Royal College of Surgeons of England also lends some pathological specimens both of the human subject and of birds. X ray photographs are also lent by the Humphry Museum and by the Royal Chest Hospital, while others are provided by the Local Government Board and Dr. E. J. Steegmann, and lantern slides are sent by Dr. Arthur Ransome.

It is intended to open similar exhibitions in all the poorer districts of London in turn, and later an extended tour of the provincial cities and towns will be made. It is also hoped that the work may be supplemented by smaller portable exhibitions in travelling vans, so that the propaganda may reach the country districts. The movement is entirely free from commercial enterprise and no charge will anywhere be made for admission.

[1] THE LANCET, vol. ii., 1907, p. 548, &c.
[2] THE LANCET, vol. ii., 1908, p. 132.

Looking Back.

FROM

THE LANCET, *SATURDAY*, June 11th, 1831.

MEDICINAL PROPERTIES OF THE SULPHURET OF CARBON.

The sulphuret of carbon, though discovered by Lampadius in 1796, has not yet been introduced into the medical dispensatories. MM. Wutzer and Pellengham have lately investigated its properties with the following results:—

1. The sulphuret of carbon is one of the most powerful of the diffusible stimulants yet discovered.

2. It excites powerfully the activity of the heart and arterial system.

3. Its internal use quickly determines acceleration of the pulse, increased heat, and sanguineous congestion towards the skin, and genito-urinary apparatus.

4. The most remarkable secondary symptoms are, abundant diaphoresis, increase of the urinary secretion and of the menstrual discharge.

5. It has been used with the utmost success as a remedy in chronic rheumatism, and in gout where no fever simultaneously exists.

6. The dose in which it is fit to give it internally, is from three to eight drops, in any convenient liquid vehicle, or on

a bit of sugar. It is also very useful as a liniment, which may be formed with sulphuret of carbon ℥ij, and camphorated alcohol ℥iv; olive oil may perhaps be advantageously substituted for the camphor solution.—*Journal de Chimie.*

[The sulphuret of carbon is easily prepared by passing the vapour of sulphur over charcoal heated to redness, in a porcelain tube; it is a transparent, colourless liquid, of great levity, and producing intense cold by its evaporation. From the extreme cheapness at which it may be prepared, we are disposed to regard it as a valuable addition to our remedial agents.]

PRICE OF SUBJECTS IN PARIS.

To the Editor of THE LANCET.

SIR,—I observed in the last Number of your Journal an article on "medical education," to which was appended a note, stating the price of subjects to be in Paris about ten shillings. I beg to inform you that for the last three years I have resided in Paris, and have had an opportunity of knowing the price of subjects, and I assure you that five francs, or four shillings and twopence, is the uniform price for unopened subjects, and three francs, or two shillings and sixpence, for opened ones.

I am, Sir, respectfully yours,

23, Castle Street, June 1. JOHN FORDE.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 7115 births and 3893 deaths were registered during the week ending June 5th. The annual rate of mortality in these towns, which had been equal to 14·7 and 13·9 per 1000 in the two preceding weeks, further declined to 12·3 in the week under notice, and was considerably lower than in any previous week of this year. During the first nine weeks of the current quarter the death-rate in these towns averaged 14·8 per 1000; the rate in London during the same period did not exceed 14·3. The lowest recorded annual death-rates in these towns last week were 3·1 in East Ham, 4·0 in Leyton, 5·1 in Wallasay, and 5·9 in Handsworth; the rates in the other towns ranged upwards, however, to 19·1 in Stockport, 19·4 in Wolverhampton, 20·1 in Wigan, and 24·0 in Merthyr Tydfil. In London the recorded death-rate last week did not exceed 11·6 per 1000. The 3893 deaths from all causes in the 76 towns last week showed a further decline of 483 from the numbers returned in the two preceding weeks, and included 359 which were referred to the principal epidemic diseases, against 413 and 417 in the two previous weeks; of these 359 deaths, 140 resulted from measles, 75 from whooping-cough, 55 from diarrhœa, 45 from scarlet fever, 33 from diphtheria, and 11 from "fever" (principally enteric), but not one from small-pox. The 359 deaths from these epidemic diseases last week were equal to an annual rate of 1·1 per 1000, against 1·3 in each of the two preceding weeks. No death from any of these epidemic diseases was registered last week in Croydon, Sunderland, Southampton, Halifax, or in 14 other smaller towns; the annual death-rates therefrom ranged upwards, however, to 3·4 in Norwich, 3·5 in Wigan, 5·0 in Wolverhampton, and 5·6 in Tynemouth. The fatal cases of measles in the 76 towns, which had been 168 and 178 in the two preceding weeks, declined again last week to 140, and were fewer than in any previous week of this year; they caused, however, annual death-rates ranging upwards to 2·2 in Salford, 2·3 in Bootle, 3·4 in Norwich, and 4·0 in Wolverhampton. The 75 deaths from whooping-cough also showed a considerable decline from the numbers returned in recent weeks; the highest death-rates last week from this disease were 1·6 in St. Helens, 2·0 in Great Yarmouth, and 2·8 in Tynemouth. The 55 deaths attributed to diarrhœa showed a slight further increase on recent weekly numbers, and caused an annual rate equal to 2·1 in Walsall. The 45 fatal cases of scarlet fever also showed an increase, and caused the highest proportional mortality in Burnley and in Tynemouth. Of the 33 deaths from diphtheria, 10 occurred in London and its suburban districts, three in Portsmouth, four in Manchester, and three in Leeds. The 11 deaths referred to "fever" showed a considerable further decline from the numbers in the three preceding weeks. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 2173, 2234, and 2254 at the end of the three preceding weeks, had declined again to 2223 on Saturday last; 275 new cases of this disease were admitted to these hospitals during last week, against 348 and 335 in the two previous weeks. The registered deaths in London referred to pneumonia and other diseases of the respiratory organs, which had been 214 and 225 in the two preceding weeks, declined to 172 in the week under notice and were 21 below the corrected average number in the corresponding week of the five years 1904–08. The deaths in London referred directly to influenza, which had been 20, 19, and 17 in the three preceding weeks, further declined last week to 10. The causes of 24, or 0·6 per cent., of the deaths registered last week in the 76 towns were not certified either by a registered medical practitioner or by a coroner. The causes of all the deaths registered during the week were again duly certified in London, Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Nottingham, Leicester, Salford, and in 53 other smaller towns; the 24 uncertified causes of death included five in Liverpool, five in Birmingham, and two both in Warrington and in Coventry.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 989 births and 582 deaths were registered in the week ending June 5th. The annual rate of mortality in these towns, which had been equal to 17·5 and 16·7 in the two preceding weeks, further declined to 16·3 in the week under notice. During the first nine weeks of the current quarter the death-rate in these Scotch towns averaged 16·9 per 1000, while in the 76 large English towns the mean death-rate during the same period did not exceed 14·8. The death-rates last week in these Scotch towns ranged from 12·3 and 14·0 in Greenock and Leith to 19·4 in Dundee, and 19·8 in Perth. The 582 deaths from all causes in the eight towns showed a further decline of 14 from the numbers returned in the two previous weeks, and included 59 which were referred to the principal epidemic diseases, against 76 and 68 in the two preceding weeks. These 59 deaths were equal to an annual rate of 1·7 per 1000, against 2·1 and 1·9 in the two previous weeks; the mean death-rate last week from these principal epidemic diseases in the 76 large English towns did not exceed 1·1 per 1000. Of the 59 deaths from these epidemic diseases last week in the Scotch towns, 25 resulted from whooping-cough, 15 from diarrhœa, seven from diphtheria, five from "fever," five from scarlet fever, and two from measles, but not one from small-pox. The fatal cases of whooping-cough in the eight towns, which had been 38 and 40 in the two preceding weeks, declined last week to 25, of which 13 occurred in Glasgow, nine in Edinburgh, and two in Greenock. The 15 deaths attributed to diarrhœa differed but slightly from the numbers in recent weeks, and included five in Glasgow, four in Dundee, and three both in Edinburgh and in Aberdeen. Of the seven deaths referred to diphtheria, showing a slight increase, five were recorded in Glasgow, and two in Dundee. Of the five fatal cases of "fever," four occurred in Glasgow and one in Greenock; three were certified as cerebro-spinal meningitis and two as enteric. Of the five deaths from scarlet fever, three were returned in Glasgow and two in Edinburgh. The two fatal cases of measles were fewer than in any recent week; they included one each in Aberdeen and Paisley. The deaths referred to diseases of the respiratory organs in the eight towns, which had been 109 and 94 in the two previous weeks, were 93 last week, and exceeded the number in the corresponding week of last year by 18. The deaths from violence in the eight towns were 14, of which nine occurred in Edinburgh and three in Glasgow. The causes of 17, or 3·0 per cent., of the deaths in the eight towns last week were unspecified or uncertified; in the 76 English towns the proportion of uncertified causes of death last week did not exceed 0·6 per cent.

HEALTH OF DUBLIN.

The annual rate of mortality in Dublin, which had been

22·3 and 21·7 per 1000 in the two preceding weeks, further declined to 18·2 in the week ending June 5th. During the first nine weeks of the current quarter the death-rate in the city averaged 22·1 per 1000, whereas the mean rate during the same period did not exceed 14·3 in London and 16·7 in Edinburgh. The 139 deaths of Dublin residents from all causes during last week showed a further decline of 27 from the numbers returned in the two preceding weeks, and included 11 which were referred to the principal epidemic diseases, against nine and 13 in the two preceding weeks. These 11 deaths were equal to an annual rate of 1·4 per 1000, the death-rate from these epidemic diseases in the same week being only 1·3 in London, but was 2·1 in Edinburgh. Of the 11 deaths from these epidemic diseases in Dublin last week, four resulted from whooping-cough, three from "fever," two from measles, and one each from scarlet fever and diarrhœa, but not one either from diphtheria or small-pox. The 139 deaths in the city last week included 17 of infants under one year of age and 44 of persons aged upwards of 60 years; the deaths of infants showed a considerable decline and were fewer than in any previous week of this year. Five inquest cases and three deaths from violence were registered last week, and 52, or 37·4 per cent., of the deaths occurred in public institutions. The causes of three, or 2·2 per cent. of the 139 deaths registered in Dublin last week were not certified either by a registered medical practitioner or by a coroner; all the causes of the 1072 deaths registered in London last week were duly certified, whereas in Edinburgh the proportion of uncertified causes of death was equal to 4·2 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Staff-Surgeons: A. C. Bean to the *President*, additional, for temporary service at Medical Department, and E. D. J. O'Malley to the *Boadicea* on commissioning.

ROYAL ARMY MEDICAL CORPS.

Captain James M. Buist is placed temporarily on the half-pay list on account of ill-health (dated June 4th, 1909).

INDIAN MEDICAL SERVICE.

Lieutenant J. A. S. Phillips has been appointed to the medical charge of the 106th Hazara Pioneers. Captain H. C. Buckley has been appointed to the medical charge of the 31st Lancers.

TERRITORIAL FORCE.

Royal Army Medical Corps.

The arrangements for the training at military hospitals of the matrons on the rolls of Territorial general hospitals have been approved by the Army Council. Each hospital is allowed two matrons. The hospitals appointed for the training are the Royal Victoria Hospital, Netley; Queen Alexandra Military Hospital, Millbank; Cambridge Hospital, Aldershot; Connaught Hospital, Aldershot; Military Hospital, Devonport; Royal Herbert Hospital, Woolwich; Alexandra Hospital, Cosham; and Military Hospital, Colchester. It is proposed that the training time shall be from June to October in each year. General officers commanding-in-chief have been directed to send to the War Office as early as possible the names of matrons who can give attendance for training in the present season.

South Wales Mounted Brigade Field Ambulance: Captain John R. I. Raywood to be Major (dated Feb. 25th, 1909).

2nd Home Counties Field Ambulance: George Thomas Willan to be Lieutenant (dated April 3rd, 1909).

2nd Wessex Field Ambulance: Thomas Phare Puddicombe to be Lieutenant (dated April 27th, 1909).

2nd London Sanitary Company: Arthur John Martin to be Lieutenant (dated April 26th, 1909).

1st Eastern General Hospital: Lieutenant-Colonel Joseph Griffiths to be Colonel (dated May 6th, 1908).

For Attachment to Units other than Medical Units.—Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel David Lennox, from the 1st (City of Dundee) Volunteer Battalion, The Black Watch (Royal Highlanders), to be Lieutenant-Colonel with the honorary rank of Surgeon-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Robert Ross Brown, from the 1st Kent Royal Garrison Artillery (Volunteers), to be Lieutenant-Colonel with the honorary rank of Surgeon-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel Henry Colgate, from the 2nd Sussex Royal Garrison Artillery (Volunteers), to be Lieutenant-Colonel with the honorary rank of Surgeon-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). Supernumerary Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel William Dakin Waterhouse, from the 4th Volunteer Battalion, The Royal Fusiliers (City of London Regiment), to be Lieutenant-Colonel, with the honorary rank of Surgeon-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel James Bruce Ronaldson, from the 7th Volunteer Battalion, The Royal Scots (Lothian Regiment), to be Lieutenant-Colonel, with the honorary rank of Surgeon-Colonel, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Captain Arthur Conning Hartley, from the 1st Bedfordshire Royal Engineers (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Surgeon-Captain George Harvey Goldsmith, from the 1st Bedfordshire Royal Engineers (Volunteers), to be Captain, with precedence as in the Volunteer Force (dated April 1st, 1908). Captain Richard Emmett to be Major (dated Oct. 23rd, 1908). Captain Alan Y. Greenwood resigns his commission (dated March 22nd, 1909).

Attached to Units other than Medical Units.—Lieutenant-Colonel and Honorary Surgeon-Colonel James K. Anderson relinquishes his commission, under the conditions of paragraph 59, Territorial Force Regulations, and is granted permission to retain his rank and to wear the prescribed uniform (dated March 3rd, 1909). Owen John Parry-Edwards to be Lieutenant (dated April 15th, 1909). Lieutenant-Colonel Arthur D. Webster resigns his commission, and is granted permission to retain his rank and to wear the prescribed uniform (dated April 20th, 1909). Surgeon-Captain James Herbert Dixon, from the Welsh Divisional Engineers, to be Captain (dated May 6th, 1908).

THE JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

In the June issue of this journal Captain R. Tilbury Brown, R.A.M.C., continues his practical article "Hints on Camping Arrangements for Sanitary Officers," which has been written with a view of giving to medical officers of the Territorial Force useful hints on camp sanitation. The first part of the communication, which was published by our contemporary last month, dealt with the selection of the camp site, water-supply, latrines, and so forth, while the current contribution deals with the arrangements to be made before the arrival of troops, the general organisation of the camp, and the duties of the sanitary squad. The article is to be continued. Some notes written by Major E. T. F. Birrell, R.A.M.C., in appreciation of the organisation of the army, with special regard to the removal of sick and wounded from field medical units to the lines of communication, is mainly composed from official sources and affords interesting reading, as does also the "Australian Army Medical Corps," written by Major S. F. Clark, R.A.M.C. Major J. C. Morgan, R.A.M.C., and Captain D. Harvey, R.A.M.C., jointly contribute an important paper on an Experimental Research on the Viability of the Bacillus Typhosus as excreted under Natural Conditions by the "Chronic Carrier," and Major S. L. Cummins, R.A.M.C., deals with surface vaccination in suspected cases of tubercle. Among the clinical notes is one on a diphtheroid bacillus isolated from water, which the author, Major J. G. McNaught, R.A.M.C., states has not been tested for pathogenicity, and there is an account of the Zittman treatment of syphilis at Netley by Major D. Lawson, R.A.M.C. This treatment, in spite of the great discomforts attending it, seems to be popular among the men. Many medical officers, the author states, who have had charge of this treatment, believe that in the case of men invalided from India who have been a very long time on mercury, and have accumulated a very large quantity in the tissues, the course benefits by assisting them to excrete the drug.

THE RED CROSS SOCIETY AND THE TERRITORIAL SCHEME.

Mrs. C. Davies Gilbert, vice-president of the district branch of the British Red Cross Society, Eastbourne, on

June 3rd gave an "At Home" at Manor House, Eastbourne, at which Sir Frederick Treves was present. In a brief speech Sir Frederick Treves said that an extensive movement, which was not yet completely developed, was proposed for the Territorial Army. The War Office was about to issue a memorandum of what it hoped the Red Cross Society would do under the Territorial scheme in case of need.

Correspondence.

"Audi alteram partem."

THE MEDICAL TREATMENT OF LONDON SCHOOL CHILDREN.

To the Editor of THE LANCET.

SIR,—The profession is indebted to you for your judicious editorial comments on this difficult question and for the opportunities you have afforded us to discuss its many bearings in your correspondence columns. There seems reason to believe, thanks largely to your efforts, that all interested in this subject may be brought to agree that from a strictly professional point of view the proposal of the County Council to make use of voluntary charities to secure treatment for their scholars should be strenuously resisted by medical practitioners. No schemes for applying the County Council's subsidy to provide honoraria for senior students or clinical assistants or to pay a nominal rental for unoccupied out-patient departments can conceal the fact that this proposal cuts at the root of what should be a fundamental professional principle—viz., that unpaid professional service should not be given to institutions which are supported or aided by grants from the rates or the exchequer. This is a principle which applies, not only to medicine, but to all other professions and occupations by which men or women earn their living and is one which needs to be constantly remembered in these days of increasing state and municipal activity.

Unfortunately, it is not enough for the profession to recognise the danger of acceding to this proposal of the County Council in order to ensure that it will not be adopted. There is reason to suppose that at some hospitals the governors may take up the position that this is a matter in which they are not bound to be guided by medical opinion. That the profession is not sufficiently united to make its wishes prevail in such circumstances is a matter for profound regret; but may we not hope that such a condition will before long be remedied? In the meanwhile it seems desirable that we should be able to point out to our lay governors that there are reasons altogether outside this professional principle which make it desirable to refuse the County Council's proposal.

There are two features of this proposal which are a serious menace to the great system of voluntary hospitals, of which the majority of Britons are justifiably proud. There is, first, the acceptance of money from a body representing the whole community and able to compel contributions to its funds; and, secondly, the entrusting to the same lay authority the responsibility of selecting cases for medical treatment. It should not be difficult to persuade the governors of hospitals that to accept money from the rates or the exchequer will very shortly render their hard financial task still harder. Many of these have been interested in voluntary schools and will remember the chief cause of the intolerable strain of supporting these institutions. It is of the essence of charitable effort that it should be actuated by a greater sympathy or by a greater foresight than that possessed by the community at large. So soon, therefore, as the philanthropist finds that his example is about to be followed by the community, as represented by the County Council or Parliament, he ceases to subscribe and finds some other charitable object in which he may hope again to lead public opinion. The knowledge that a definite grant is made annually by the County Council to a voluntary hospital, even though it be for a restricted part of its work, will, if precedent be followed, speedily lead to a loss of voluntary subscriptions and legacies of far greater value than the subsidy. The other dangerous feature of the County Council's proposal is not so easy to bring home to those who are interested in the voluntary hospitals, whether as governors or medical staff. Nevertheless, it is of vital importance and must be kept well in mind in handling this question as well as in dealing with the important changes in hospital administration that will come when the Poor-law medical service is reformed. If our great voluntary hospitals are to survive the awakening of the public conscience as to medical matters which the activity of the County Council and the Poor-law Commission's report indicate, it can only be by their impressing on the philanthropic public that they will still be able to provide for the public something altogether different from the medical service provided by the municipality or the State, or whatever body it may be which will take the place of the "broken-up" Poor-law.

It is true that in the past the voluntary hospitals, shocked by the inefficient medical service supplied by the State, have supplemented its deficiencies and provided the simplest medical treatment for all-comers. Already this has become almost unnecessary, and in the future voluntary hospitals must base their appeal for support on the grounds that their service is not parochial but is Empire-wide, and consists essentially in dealing with obscure and difficult cases and in the making of medical knowledge and its diffusion throughout the world. To establish and consolidate this position is the duty of everyone who believes that voluntary hospitals are worth maintaining. No more serious blow could be dealt to the unique reputation of these institutions than for our governors to contract with the County Council for the wholesale treatment of ailments which are said to afflict 5 per cent. of the children attending the schools. Let the County Council make whatever arrangements it sees fit with medical practitioners to treat these patients in the immediate neighbourhood of the child's home or school, and let the medical man entrusted with this duty recommend the help of the hospitals in those cases which are found on full investigation to require special facilities for diagnosis or treatment.

I am, Sir, yours faithfully,

June 6th, 1909. LAURISTON E. SHAW.

FRACTURE OF THE SCAPHOID BONE OF THE WRIST.

To the Editor of THE LANCET.

SIR,—You invite your readers to record any cases similar to that reported by M. Judet. I can recall several such. One was that of a boy, aged 15 years, who fractured his scaphoid in turning a hand somersault. When seen some seven weeks after the accident he possessed but little movement at the wrist, while any attempt at extension was very painful. Pressure over the bone even at this date was resented and there was considerable pain at night over the outer and palmar aspect of the hand. The x ray showed a transverse fracture through the centre of the bone, with dorsal displacement of the inner half. I have not met with any old case which did not exhibit limitation of movement most marked in the direction of flexion.

Fracture of the scaphoid is easily the most common of the carpal bones. It occurs with rare exceptions from a fall on the extended hand. The most obvious clinical sign is an acute pain when the wrist is forcibly adducted and extended. In addition one finds a swelling over the radial wrist on the dorsal aspect, a general rigidity and, as Codman and Chase have pointed out, an acute tenderness in the anatomic snuff-box when the hand is adducted. In some cases I have noted a painful area covering the palmar aspect of the thumb and index finger. I have detected crepitus in one case only.

In a recent case I would recommend the surgeon to put forcible pressure over the scaphoid while the wrist is flexed and adducted. This is best done through the snuff-box between the first and second extensors of the thumb. The wrist should in any case be kept fixed in the well-extended posture for at least a fortnight. During this hyper-extension the fingers should be left so that they may be voluntarily freely moved. For two weeks more massage and movement should be alternated with fixed hyper-extension and then treatment may end. I am convinced that immediate mobilisation and massage is a grave error. In old cases

forcible wrenching under anæsthesia and fixation in hyper-extension offers the best mechanical advantage to wrist and fingers. In two instances I have excised the prominent fragment with relief as regards pain but with no increase of mobility. I am, Sir, yours faithfully,

Liverpool, June 8th, 1909. ROBERT JONES.

MICROCOCCUS TETRAGENUS AS A PATHOGENIC ORGANISM.

To the Editor of THE LANCET.

SIR,—In the Proceedings of the Royal Society of Medicine (Clinical Section) for April, 1909, Dr. E. von Ofenheim contributed a paper on the Vaccine Therapy of Septicæmia, in the course of which he commented on the scarcity of the literature concerning micrococcus tetragenus infections. It accordingly seems worth while to place on record my experience of that organism. In 1901–1902 I was serving in H.M.S. *Galatea* in home waters, and from the suppurations (boils, &c.) which occurred recovered what organisms I could. In that ship I only once found a gelatin-liquefying coccus (staphylococcus); I never found a streptococcus, but from all the cultures worked out I obtained what was, I have no doubt, micrococcus tetragenus. I recognised it in smears of sputa as well in that ship. I also found, once only, a pathogenic yeast growing in a venereal sore. I have never found M. tetragenus in other ships. M. tetragenus seemed to me to be associated with little pus formation, but to excite large phlegmons (extensive surrounding swelling and redness) and to cause much, sometimes profuse, serous discharge.

Dr. von Ofenheim speaks of a septicæmia in rats and mice caused by this organism. I do not think we had any mice in the ship, and rats must have been few, as I have no remembrance of them. In those days we did no blood cultures, and I am sorry to have no further information. Still, it is a matter of some interest that the same observer should have found micrococcus tetragenus frequently associated with the suppurations of one ship, yet never in those of another, both these ships being in English waters.

I am, Sir, yours faithfully,

W. E. HOME,

H.M.S. *Daedalus*, Bristol, May 30th, 1909. Fleet-Surgeon, R.N.

THE AFTER-TREATMENT OF CATARACT EXTRACTION.

To the Editor of THE LANCET.

SIR,—I have read Mr. A. Lawson's lecture in THE LANCET of May 29th on the after-treatment of cataract extraction with particular interest, because for the last 15 years I have adopted a different method which, I think, makes the patient more comfortable both in body and mind. So far no bad results have occurred which could reasonably be traced to the freedom my patients enjoy, and the number of extractions (about 700) is sufficient to have disclosed any serious dangers attaching to my plan.

After the operation the eye is covered with a small piece of cotton-wool, fitted carefully into the inner corner by the nose, and this is kept in place by a piece of fine isinglass plaster. The plaster is pulled just tight enough to exert a little pressure over the inner corner of the eye, but no pressure is made on the globe; a very slight pressure in the corner will keep the lids closed. Over the wool, but not pressing on it, is placed a conical shield of Willesden roofing paper, and this is fixed in position with short strips of isinglass plaster, one over the bridge of the nose and the others on the cheek and forehead. The unoperated eye is never covered, nor are the hands tied; the shield will resist a hard blow, and the eye is never accidentally injured under it. A shield stuck on in this way is much more comfortable than any bandage round the head.

I do the operation in the morning and make the patient go to bed and keep very still all day, and the next morning, unless there is some special reason against it, which is very seldom the case, he gets up and sits in a chair, keeping fairly quiet. On the morning after the operation the shield is taken off, the wool changed, and a drop of atropine and cocaine applied; subsequently the eye is dressed each morning, but the atropine is not used oftener than is necessary to keep up the dilatation of the pupil. In the summer the patients are often out in the garden on the third or fourth day after the operation and derive much benefit from it; they eat their ordinary food and, in fact, are not treated as sick people at all.

I never tell a patient to expect pain, but tell him that if he should chance to get any after the operation he need not be alarmed at it. A large number say they have no pain. I believe pain may be caused by pressure on the eye and by the heat of a thick dressing, and am therefore careful to use only a little wool and to apply what little pressure is necessary to keep the eye shut only in the corner. An empty anterior chamber is not necessarily a cause of pain, for it may be empty for days together without any pain at all. At one time I bandaged both eyes and kept the patients in bed, but gradually gave up such irksome details as seemed to be possibly unnecessary and, if so, harmful, and have thus arrived at my present plan.

There is nothing worse for old people than thoroughly to upset their accustomed way of life, and, by making "heavy weather" of their treatment, give them the idea that they are undergoing some dangerous process. Of course, anxiety is inseparable from surgery, but the surgeon should keep it to himself, and the more light-hearted the patient can be kept the better will he recover and the less will his pain hurt him. To blindfold a patient, handcuff him, feed him on slops, tell him to lie still in bed and keep his mouth open if he moves, and to expect pain—all this seems to me the best way to ensure that he shall be nervous and have pain; and if to this suggestive treatment is added a dose of chloral there is surely enough to account for the night terrors and dementia Mr. Lawson describes without the shock of the little operation. If all this treatment were necessary for the safety of the eye it would have to be endured, even though it is obviously bad for the patient. My experience convinces me that it is not necessary, and that patients may get through the operation for cataract without any material discomfort. I am, Sir, yours faithfully,

J. F. BULLAR, M.B. Cantab.,

Southampton, June 1st, 1909. F.R.C.S. Eng.

THE EMMANUEL MOVEMENT AND THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—We are constantly in receipt of letters from your side of the Atlantic which show that there is a widespread misunderstanding among physicians, clergymen, and others as to the principles and methods of what has come to be known as the "Emmanuel Movement." As those who are responsible for the inauguration and general guidance of this work, we feel it to be our duty to correct this misconception, and to acquaint the British public with the real aims and motives of our undertaking. We ask you, therefore, to be good enough to publish the following statement:—

The fundamental purpose of the Emmanuel Movement is to ally in friendly coöperation the doctor of medicine, the psychologically qualified minister of religion, and the trained social worker with a view to the alleviation and arrest of those semi-nervous, semi-moral disorders which go by the name of "functional disorders of the nervous system." Hence, our aim is not to found or propagate a healing cult, or to practise medicine, or to substitute our activities for those of the physician. We could not do any of these things and at the same time retain our self-respect. On the contrary, our aim is to assist the physician *in those cases where a moral or spiritual problem is involved.* From the very beginning we have associated ourselves with reputable medical men, and without the general coöperation of the medical profession our enterprise would come to an end. The whole work is under rigid medical control, as will be seen from the following rules which we have adopted: (1) No person shall be received for treatment unless with the approval of and having been thoroughly examined by his family physician, whose report of the examination shall be filed with the church clinic records; (2) no patient shall be referred for diagnosis or treatment to any specialist or assistant save with the advice and consent of the patient's own physician; (3) all patients who are not under the care of a physician must choose one, and be themselves in his care before they can receive treatment at Emmanuel Church. It thus rests

wholly with the physicians and not with the clergymen to decide whether a patient should be referred to a neurologist or other specialist, and which cases, if any, are suitable for treatment by moral and religious re-education. In view of these facts, we must decline to be held responsible for the action of any individual or organisation acting in contravention of any of these principles or methods. In England the committee which represents our work bears the title "Church and Medical Union."

We are, Sir, yours faithfully,

ELWOOD WORCESTER.
SAMUEL MCCOMB.

Emmanuel Church, Boston, U.S.A., May 24th, 1909.

CASE OF CEREBRAL HÆMORRHAGE FOLLOWED BY HYPERPYREXIA AND DEATH.

To the Editor of THE LANCET.

SIR,—In THE LANCET of May 15th, 1909, p. 1386, Mr. Vincent P. Norman describes a case under the above heading, and adds, "a clinical fact not often recorded if we judge from a perusal of literature bearing on the subject."

The above remark, and my having had a similar case some time ago, must be my excuses for recording the following. The case occurred on board the R.M.S. *Oropesa*, of the Pacific Steam Navigation Company. The patient, a lady, aged 53 years, was very stout and of plethoric appearance. Her husband informed me that she had always been in fairly good health, and as a rule took but little alcohol. Soon after leaving Lisbon, however, I noticed that she took a good quantity of red wine with her meals, and as we got into tropical heat the quantity was considerably increased. On the third day after leaving St. Vincent, Cape de Verde Islands, I noticed that her face was very congested, and I feared apoplexy. About 4 A.M. the following morning I was hurriedly sent for to see the lady in question, the steward informing me that she had had a "fit." On my arrival I found the patient quite unconscious, pupils were dilated and inactive, radial pulse could not be counted, respiration was at first markedly stertorous, becoming later Cheyne-Stokes in character, and there was complete relaxation of her extremities. Her face was very cyanosed and she was obviously dying.

The point, however, that impressed me most was the sensation of extreme heat imparted to my hand. I had felt nothing like it before, and for this reason I decided to take her temperature. In the axilla the thermometer registered 107·8° F., and in the rectum 108·6° F. To make sure that the thermometer was accurate I obtained another one, which gave precisely the same result. The patient died within an hour of my seeing her, and was buried at sea the next day.

I am, Sir, yours faithfully,

MORGAN RICHARDS, M.D., B.S. Durh.

Chelsea, S.W., June 4th, 1909.

FERGUSSON *v.* MALVERN URBAN DISTRICT COUNCIL: APPEAL OF PLAINTIFF BEFORE HOUSE OF LORDS.

To the Editor of THE LANCET.

SIR,—Mr. F. W. Joshua writes under the above heading in your last issue "to prevent any misconception of the true state of facts that may arise from reading" my letter in your issue of May 29th. I cannot see that his letter is called for by anything I said in mine, nor can I see that it serves any useful purpose; but Mr. Joshua probably differs from me on this point. On the contrary, I think that his letter, far from fulfilling its object, renders the case liable to be misunderstood, as anybody reading it, and not having followed the case closely, would naturally conclude that my father had stolen the water-supply. Such a conclusion is quite wrong, and is detrimental to the character of a medical man; and it is on this account that I now beg the hospitality of your columns to enable me to correct the inevitable misapprehension that must arise from a perusal of Mr. Joshua's letter.

The jury found that Dr. Fergusson had no right to the water, because he could produce no documentary or other evidence that he was entitled to it. There is unimpeachable evidence that the pipe conveying the water had been exactly as it was found as long as Dr. Fergusson had occupied the establishment, 16 years, and that no alteration whatever had been made to it by anyone with his knowledge or on his behalf. It was probably the original means of supply from the time when the house was built in 1843, a time when no public supply existed and when anybody was at liberty to take water wherever it was to be found. This explains the absence of evidence as to ownership, and the jury had no alternative to finding that my father had no legal right to it.

The idea that he was *fraudulently* using it is negatived by the fact that the jury found him not guilty of contributory negligence, as was alleged by the defendants. Some of the wild assumptions and ridiculous conjectures which the jury were asked to believe, *without evidence*, were of a damaging character, and included the idea of my father having stolen the water. Repetition of these assumptions in the House of Lords was promptly cut short by the Lords asking point-blank whether there was any evidence whatever in support of them; as the Lord Chancellor said, "We want facts, not theories."

I think I have said enough to justify the last paragraph of my letter in your issue of May 29th, and to correct the impression which must be left by Mr. Joshua's letter; my father has through no fault of his own lost his case, but has emerged with a clean character, in spite of much "mud-throwing," and on that account he deserves the sympathy of all, especially his professional brethren.

I am, Sir, yours faithfully,

J. N. F. FERGUSSON, M.B. Cantab.

Malvern Hydropathic Establishment, Great Malvern, June 9th, 1909.

A PLEA FOR THE USE OF ANTI-DIPHTHERITIC SERUM.

To the Editor of THE LANCET.

SIR,—In my letter published in THE LANCET of June 5th under the above heading the report of Case 1 should have read as follows:—

"I saw C. D. on Nov. 5th, 1906, at 9 A.M., with quinsy, soft palate very red and œdematous, with a patch of membrane on left tonsil. He had been using hot inhalations of Friar's balsam but could not swallow. At 10.30 A.M. I injected 4000 B.U. and at 10 P.M., when I again visited him, he could swallow easily; a swab was taken with negative results. *The next day he had a profuse scarlet fever rash.* The case ran an ordinary course, but the quinsy aborted." In my communication the words which I have italicised were inadvertently omitted, and as they form the central feature of the case I trust you will allow me space to correct the slip.

I am, Sir, yours faithfully,

Wanstead, N.E., June 5th, 1909. FRANK ARGLES.

THE GERMAN CONGRESS OF INTERNAL MEDICINE.

(FROM OUR BERLIN CORRESPONDENT.)

THE German Congress of Internal Medicine was held at Wiesbaden from April 19th to 22nd, Professor SCHULTZE (Bonn) being in the chair.

Diseases of the Stomach.

Professor LENHARTZ (Hamburg) presented a report on the results obtained by his method in the treatment of gastric ulcer. I may here mention that copious details of the method were contributed by Dr. J. Victor Haberman of Hamburg to THE LANCET of July 7th, 1906, p. 25. Professor Lenhartz said that the special features of his system included absolute rest in bed for at least four weeks and the wearing of an ice-bag over the stomach. Instead of the usual starvation diet the patient, even when hæmatemesis has occurred, received on the first day iced milk and four beaten-up eggs, sometimes with a little wine. The daily quantity of food was gradually increased, so that on the seventh day the patient began to take eight eggs, 40 grammes of sugar, 800 grammes of milk, 70 grammes of chopped raw meat, and 100 grammes of milk and rice;

while on the fourteenth day he began to take eight eggs, 50 grammes of sugar, 1000 grammes of milk, 70 grammes of chopped raw meat, 200 grammes of milk and rice, 100 grammes of zwieback (a kind of rusk or "pulled bread"), 50 grammes of raw ham, and 40 grammes of butter. Professor Lenhartz pointed out that the starvation diet formerly in use was very detrimental, especially to anæmic patients, and that the egg albumin answered well for fixing the free hydrochloric acid in the stomach. There had now been 295 cases treated by this method—262 of them immediately after severe hæmorrhage. Of these cases only seven—i.e., 2·3 per cent.—terminated in death. In only 18 cases did fresh hæmorrhage occur. Neither narcotics nor purgatives were given, as it was essential that the bowels should not be moved. The death-rate was much lower under this treatment than under any other, Dr. Leube's method included. The patients were not discharged from hospital until no blood had been present in the fæces for several weeks. When hæmorrhage occurred repeatedly the case must be suspected to be one of either cancer or cirrhosis of the liver.

Dr. ROSENFELD (Breslau) said that the aim of treatment in all diseases of the stomach was to prevent occlusion of the pylorus. This was done by the administration of fat in the form of cream. The other food must be prescribed according as free hydrochloric acid was present or absent; in acidity of the stomach albuminates must be given and carbohydrates avoided; in hypo-acidity of the stomach it was advisable to give albuminates sparingly and carbohydrates freely. The meals should be taken at intervals of six hours, so as to allow the stomach sufficient repose. Previously to the above diet, for four days the food should consist of nothing but cream in a quantity of 500 grammes three or four times a day. This diet had a styptic effect in hæmorrhage of the stomach, it opened the pylorus, and decreased the hyperacidity.

In the discussion, Professor von LEUBE (Würzburg) stated that among 627 cases of gastric ulcer treated by him during the past 11 years the mortality was 0·3 per cent.; in cases attended with hæmorrhage it was 2·5 per cent. He pointed out that the four principles aimed at in his treatment were absolute rest for a fortnight, small doses of Carlsbad salts, hot poulticing, and starvation diet. He was in favour of abstinence from food, because vomiting was often produced even by small quantities. In hæmorrhage lasting for two or three days total abstention from food was advisable. The administration of morphine was useful for checking peristalsis and adrenalin for checking hæmorrhage. He agreed with Professor Lenhartz that purgatives should be avoided.

Professor KREHL (Heidelberg) drew attention to the fact that as regards gastric acidity there were evident points of difference between the inhabitants of north and south Germany respectively, and that owing to these differences there might be diversities of opinion on questions relating to diet. In north Germany hyperacidity was rare.

Dr. GERHARD (Basle) gave comparative statistics of the Leube and Lenhartz procedures. He said that patients treated by Leube's system could leave their beds on an average after 19·4 days and could leave the hospital on an average after 39·6 days; the corresponding figures under the Lenhartz system were 25·1 and 40·3 days.

Professor SCHMIDT (Halle) said that rest in bed was more important than the diet; by the horizontal position of the body in bed the stomach became able to move its contents.

Dr. VON TABORA (Strasburg) recommended large doses of atropine for the purpose of combating the hyperacidity. Of 100 patients treated according to Leube's method, 58 had after a fortnight only a little decreased in weight, while 42 had even increased.

The Action of Digitalis on the Organs of Circulation.

Dr. OTFRIED MÜLLER (Tübingen) said that intravenous injections of digalen and strophanthin in the usual doses did not produce an obvious effect on the vessels. Under the use of digitaline the force of the cardiac contractions was only slightly increased in healthy persons, but it was strongly increased in cases of weakened heart. Digitalis and its compounds were cardiac tonics, whilst carbonic acid baths acted on the vaso-motor system.

Dr. FLEISCHMANN (Berlin) recommended crystallised strophanthin for intravenous injections instead of the usual amorphous strophanthin. In patients suffering from cardiac diseases the results were often striking, the pulse becoming normal, while dyspnœa and cyanosis disappeared.

Dr. VOLHARD (Mannheim) recommended that in disorders of the circulation adrenalin should be injected in doses varying from 0·5 to 1·0 milligramme. The effect of this was that cyanotic patients acquired a pale complexion, the blood pressure increased, and a general improvement manifested itself.

Professor KRAUS (Berlin) said that he approved of the administration of adrenalin in syncope, and he had even given six injections daily without any ill-effect. Used in this way adrenalin was always satisfactory and it had evidently a tonic action on the heart.

Professor HEUBNER (Berlin) said that he had given in 12 hours to children suffering from septic diphtheria as much as 12 cubic centimetres of a solution of adrenalin of strength 1 per 1000.

Peripheral Sensibility.

Dr. HENRY HEAD (London) read a paper on Peripheral Sensibility and its Estimation. In his opinion the afferent nerves were of three kinds, respectively conveying impulses which were sorted in the central nervous system into the three great functional groups of (*a*) touch, (*b*) pain, and (*c*) temperature and sense of position. Recovery of sensation after complete division of a peripheral nerve began with disappearance of the analgesia and with the return of sensibility to the extreme forms of temperature, but the area over which gentle touching could not be felt remained unaltered for a much longer period. The recovered sensibility to heat and cold was due to the presence of minute areas ("hot and cold spots"), each of which could be stimulated by heat or cold alone. This form of sensation was designated protopathic sensibility. At a later period it became possible to discriminate two points with more or less approximation to the normal accuracy. This form of sensibility was designated epicritic, since it was peculiarly associated with the localisation and discrimination of cutaneous stimuli. Every peripheral afferent nerve contained protopathic and epicritic fibres.

Dr. SCHÖNBORN (Heidelberg) said that he had made a trial of Dr. Head's methods in 60 cases of organic nervous disease and in his opinion they gave satisfactory results. For testing the rise of temperature he recommended Miescher's apparatus, which was preferable to the use of test-tubes; he had also devised a new algometer. He stated that in syringomyelia moderate temperatures between 26° and 27° C. were correctly distinguished, whilst high and low temperatures were not. The hyperæsthesia for low temperatures in tabes dorsalis was a disturbance of sensibility which had nothing to do with a diminution of the cold points, but must be regarded as a protopathic feeling of discomfort. There was apparently a contradiction in Dr. Head's opinion that this protopathic zone was only observed in troubles of the peripheral nerves, but it must be considered that the disease was localised, not in the medulla, but in the region of the roots. Dissociation of disorders of peripheral sensibility was much more frequent than has hitherto been suggested and could be recognised only by the exact method of Dr. Head.

Professor GOLDSCHEIDER (Berlin) said that the existence of a protopathic and of an epicritic nervous system seemed to him not sufficiently proved. The facts observed by Dr. Head might be based on differences of stimulation. Dr. Head's protopathic state was, in his opinion, identical with Professor Leyden's relative hyperæsthesia. The difference between deep and other sensibility was justified. Such differences as those between the protopathic and epicritic systems were seen when the nerves were compressed, and even when menthol was applied to the skin. Such relative hyperæsthesia was observed also in hemiplegia. It was not always justifiable from an observation of dissociation of sensation to assume the existence of different systems of fibres. Irradiation in the protopathic stage was caused by the cohesion of the nerve fibres in the central region. In the peripheral part of their course the elements were lying together; in the medulla they were separated, but a connexion was maintained by the ganglia. This was the cause of the phenomena of summation and irradiation.

Dr. SCHMIDT (Halle) said that many obscure points had been cleared up by Dr. Head's researches, but that the genesis of spontaneous pains in neuralgia was not yet explained; it possibly depended on an increase of the deep sensibility.

Dr. HEAD, in his reply, said that Professor Goldscheider's view with regard to the connexion of the fibres was not in

accordance with certain facts. He mentioned a case of punctured wound of the seventh cervical vertebra in which, apart from the typical loss of sensibility for pain and temperature on the right side, there was an isolated disturbance of the sensibility of the left forearm in the line of a protopathic zone. This happened without there being any connexion of fibres.

On the Relation between Oxygen Supply and Circulation.

Dr. PLESCH (Berlin) described a method for determining in the human subject both in health and disease (1) the quantity of blood driven into the circulation at each contraction of the heart (*Schlagvolumen*); and (2) the quantity of blood which circulated in a minute (*Minutenvolumen*). He found that in healthy persons the average *Schlagvolumen* was 60 cubic centimetres and that the average *Minutenvolumen* was 4·5 litres, the extreme range being respectively from 40 to 80 cubic centimetres for the former and from three to five litres for the latter. It was found that 30 per cent. of the oxygen in the arterial blood was appropriated for the organism, so that the blood came back to the heart with 70 per cent. In valvular diseases the *Schlagvolumen* was not at all smaller; it might even be greater in the state of compensation as, for instance, in stenosis of the mitral valve. The duration of circulation was in healthy persons 55 seconds, and 65 beats of the heart were necessary to propel the blood from the heart through the circulation and back to the heart. In increased muscular exertion the duration of the circulation might be accelerated by five seconds, and this was also the case in anæmic persons, for in them the quantity of the blood was diminished and the *Minutenvolumen* was increased. On the other hand, the duration of the circulation was but little increased in chlorosis.

General Septicæmia Originating in the Mouth.

Dr. PAESSLER (Dresden) reported a series of cases of septicæmia which had originated in the tonsils. Sometimes, although the tonsils themselves were healthy, suppuration might be present in their recesses. The septicæmia might be treated successfully by removing the source of infection in the mouth. Polyarthritis was also often caused by affections of the tonsils.

(To be continued.)

REPORT ON HUMIDITY AND VENTILATION IN COTTON WEAVING SHEDS.

(FROM OUR MANCHESTER CORRESPONDENT.)

THE report of the Departmental Committee on Humidity in Cotton Weaving Sheds is of great interest to all engaged in the cotton industry and has urgent bearings on the health of the cotton operatives; and as Lancashire and Cheshire are the chief seats of the industry its importance locally is very great. Since the first meeting of the Committee on Dec. 13th, 1907, in Manchester, 37 of the 44 meetings held took place in Manchester and the neighbourhood and the remainder in Glasgow and Bradford. The weaving sheds were divided into "humid" and "dry." Of the former 76 were visited, and 31 of the latter, while four worsted mills and ten works where ventilating plant is manufactured or used were also visited. The questions of the use of artificial humidity and of ventilation have been discussed for 30 or 40 years, and the practice of the former seems to have obtained first at Padiham, where it is said it was introduced from America. In 1882 Dr. Bridges and Mr. Osborn reported that the chief complaint was that the clothes of the workers were so damped by the steam that coughs and colds and lung diseases were contracted, with rheumatic and other ailments. These gentlemen thought that neither excessive dust nor steam was inseparable from the process of heavy sizing, and that there were secrets of procedure which did away with the need for the diffusion of dust or moisture, and that there was a greater evil than dust or moisture in the lack of ventilation.

As the result of an alarming report by Dr. Stephenson, medical officer of health of Blackburn, in 1887 on the health of the cotton workers of the district the borough health committee in 1888 had a special inquiry made, and concluded that the ventilation of the mills was unsatisfactory, especially in winter; that heavy steaming had been practised in Blackburn; that the conditions of work "had influenced the high death-rate" of the borough; and that heavy and excessive steaming was injurious to the health of the workers, but that light steaming with proper ventilation was not injurious. In 1889 an Act was passed fixing and tabulating the maximum limits for humidity permissible at different temperatures, and a minimum of 600 cubic feet of fresh air per hour for each worker was ordered. Coming nearer to the present time, a committee consisting of Sir Henry Roscoe, Sir William Roberts, and Dr. Arthur Ransome, appointed in consequence of the representation of the Weavers' Associations in favour of the abolition of "steaming," issued a report in 1897 advising certain improvements in the hygienic conditions, and a standard of 9 volumes of carbonic acid in 10,000.

In 1904 it was shown by Mr. Frank Scudder, F.I.C., that with adequate and efficient ventilating plant the air of the shed might be kept within the prescribed limits. Notwithstanding the efforts made to improve the conditions of the workers, the leaders of the operatives organised a ballot to get the opinion of the workers on the question of the abolition of "steaming," on the ground that it "produced not only great bodily discomfort but also injury to health," with the result that 68,154 voted for its abolition, 3094 against, and 1221 were neutral, a convincing majority against "steaming." There seems to be plenty of evidence that "steaming" causes discomfort, but the committee considered that direct injury to health was not proved. It seems that in the United Kingdom there are 1030 "humid" and 1636 "dry" cotton weaving sheds, but while in the latter case the goods made are of finer quality, it is due to the use of superior qualities of yarn. The same classes of goods can be made in the "humid" sheds of an inferior quality of yarn, which is possible because the damp air prevents the frequent breakages and delays caused by constant "piecing." All recognised authorities allow that weaving is facilitated by the employment of artificial moisture, and before the introduction of modern methods primitive modes, such as damping the floor, called in these parts "degging" (you may hear a Lancashire or Cheshire gardener call a watering-can a degging-can), or by putting troughs of water under the looms, or wet cloths on the beams, especially when dry winds prevailed, were followed. Many of the witnesses suggested that by the use of better material or improved sizing the necessity for humidity would cease, but as long as there is a demand for low-priced goods so long will there be a supply, "if not from this country, from others, to the detriment of British trade."

Sir Henry Roscoe's committee seems to have considered chiefly the deposit of moisture on the clothing, and the consequent chilling effect, rather than the physiological disturbances caused by work in a hot and humid atmosphere. It is believed now that the chilling effect on leaving the hot sheds is due to perspiration and absence of evaporation from the clothing, rather than to deposit of moisture in the clothing taken off, "except when such clothing is kept in unsuitable places." The table of humidity given in the Act of 1901 begins at a dry bulb temperature of 35° F. and a wet bulb temperature of 33° F., and goes up as high as a dry bulb temperature of 100° F., and a wet bulb temperature of 91° F. It cannot, however, have been thought possible that weaving could be carried on at temperatures near either of the extremes. On the whole, the scientific witnesses agree generally with the view of Dr. Haldane as given in the *Journal of Hygiene*, vol. iv., October, 1905. In still and warm air what matters to those present is the temperature shown by the wet bulb thermometer. If it exceeds about 78° F., continuous hard work becomes impracticable, and he would propose that 75° wet bulb should be taken as the maximum. Below that there should be a difference of 2° between the two thermometers. During the cooler part of the year the maximum temperature should be 70°, because more clothing is then worn, so that when in a warmer place workers are more liable to feel the heat and get wet from perspiration. He was also in favour of humidifying by means of water rather than steam to supply the requisite moisture and produce cooling by rapid evaporation. It seems obvious that a fine spray of cold water might be an improvement on hot steam. In the course of the medical evidence also it was asserted that a dry shed, even with comparatively bad ventilation, is preferable to a humid shed conforming to the present nine-volume standard (of CO_2). The ventilation standard had important bearings on the question of humidity

With comparatively dry air, the oftener it is changed in the shed the more necessary is it to have artificial humidity in aid of the weaving process. In 1902 the Haldane Committee recommended a standard of 12 volumes of CO_2 per 10,000, or 20 volumes when gas or oil is used for lighting. This proposal was much criticised, and by some considered reactionary, and so required careful consideration by the committee. Authorities, such as Parkes, de Chaumont, and Pettenkofer, recommended a standard of six to ten volumes per 10,000, and it has been generally accepted that the CO_2 was an indication of other impurities injurious to health rather than the CO_2 itself. This idea, however, seems now to be looked upon as "early Victorian." The trend of opinion now is to treat the idea of something injurious existing in expired air beyond the CO_2 itself, as a myth, and that far more CO_2 in the air can be breathed comfortably than is usually thought desirable provided that other conditions are favourable and that the supply be continuously changed. For instance, there is a mill in Blackburn where the same class of goods is manufactured in two sheds under the same roof but divided by a partition. In one shed there is artificial humidity while the other is "dry." In the latter the CO_2 varied between 34 and 41 volumes per 10,000 during many months, yet the workers were as healthy as those in the "wet" shed where the standard was maintained. No single complaint was made by the operatives in the dry shed where there is no legal standard, while in the humid shed complaints were universal.

The evidence of Dr. Haldane, Dr. Leonard Hill, Dr. M. S. Pembrey, and Dr. A. E. Boycott goes to show that the ill effects of crowded rooms are due less to the percentage of CO_2 than to other factors, as "the heat, humidity, and nervous fatigue from excessive illumination and excitement." They say:—"One cannot detect any bad effect from 60 volumes per 10,000 when the temperature of the room is low;" and "The important thing is to keep the wet bulb temperature low." "The quality of freshness and stuffiness in a building, and in consequence the energy or slackness of the inhabitants, has nothing to do with the content of the air in CO_2 as such. Cool air free from unpleasant smell but containing 3 per cent. of CO_2 "is found to be a distinctly invigorating mixture." These opinions are backed up by many quotations from European and American physiologists to the effect that, contrary to the old idea, "There is no poison in breath." "Whenever in shut-up, crowded rooms certain impairment of health ensues, involving headache, dizziness, sickness, &c., these symptoms are attributable solely to heat retention." "The normal conditions of the surrounding atmosphere, viz., temperature, humidity, and movement, are of enormously greater importance for our comfort and health than the chemical composition of the air. Further, the refreshing sensation noticeable on abundant ventilation of closed rooms or in the open air, results not from the greater chemical purity of the air, but from the more rapid heat-loss from the body." It is easy to understand that, influenced by these views, the committee feels justified in recommending that in humid sheds the standard of ventilation should be 12 volumes of CO_2 per 10,000, and that when gas or oil is used for illumination 20 volumes of CO_2 in 10,000 should be allowed.

As regards the maximum temperature of the wet-bulb thermometer the committee thinks that the evidence scarcely justifies it in coming to a final conclusion. Notwithstanding this, it unanimously expresses the opinion that the discomfort and possible injury of the operatives can best be met by fixing a maximum limit of wet-bulb temperature and by securing between the wet- and dry-bulb temperatures a difference sufficient to prevent the deposit of moisture. The use of steam for humidifying is generally condemned. There are various forms of "saturators" which are specially useful where the plenum system of ventilation is adopted. Another evil is due to the construction of the sheds, by which the air-intake is in the roof, and so is heated by the outflowing air. It is urged that the white-washing of the roofs should be more thoroughly done, and the steam-pipes should be kept better covered. It is also suggested that the taking of the body temperature, which was begun by Dr. E. L. Collis, H.M. medical inspector of factories, should be resumed, especially in sheds where the heat is abnormally high. They should be visited on the hottest days of the summer, so that some definite information as to the effects of working in damp atmospheres at high temperatures could be obtained. To carry this out it is suggested that the help of the medical officers of health should be obtained, and if this suggestion comes into effect it is to be hoped that this extra work will be met by increased pay. Steaming has, it seems, been largely superseded by appliances for introducing "atomised" water into the sheds, and frequently this is also used for the double purpose of ventilation and humidifying. "Live steam" raises the wet-bulb temperature very considerably, and its use is very unpopular among the operatives. In the districts of Burnley, Nelson, and Colne the operatives have steadily refused to work in the sheds if artificial humidity is introduced, and no standard of ventilation has been fixed for them. The amount of CO_2 in these sheds in winter is, on the average, 16·5 volumes in 10,000, but exceptionally this is much exceeded, and legislation is desirable in these cases. Mechanical ventilation does not seem to be much used in the dry sheds, but it has been complained of as causing draughts, which would probably not have been the case if the incoming air had been warmed. The purity of the water used is, of course, important, and with the assistance of Mr. Scudder a standard of purity has been agreed on. Briefly, "any water which absorbs from acid solution of permanganate of potash in four hours at 60° more than 0·5 grain of oxygen per gallon of water shall be deemed to be liable to cause injury to the health of the persons employed." Cloak-rooms are recommended, but there are some difficulties met with. A self-registering hygrometer, to do away with the labour at present involved in taking records three times daily, is very desirable, but none so far are fitted to stand the dust and vibration of the weaving sheds.

Summarising the recommendations of the committee, a limit of the wet-bulb temperature should be fixed at which all admission of artificial humidity should cease, the limit to be determined by early experiment and to be the lowest necessary for efficient weaving. The schedule of humidity should be amended by eliminating all temperatures above the maximum, to be hereafter determined, and all temperatures below 50° on the dry bulb. The standard of ventilation in humid sheds should be altered from 9 to 12 volumes of CO_2 per 10,000. That in dry sheds 15 volumes of CO_2 in 10,000 should be the standard; that draughts must be avoided in the sheds; that a standard of purity should be fixed for water to be used for the purpose of humidifying; that there should be cloak-room arrangements; that the readings of the thermometer should be taken jointly by representatives of employers and employed; and that there should be a standard hygrometer. It is also recommended, among other details, that the size of steam pipes for the wet bulb should remain as at present pending further inquiry, and the covering of them be maintained efficiently; and that the cleansing of floors and walls should be better attended to, as also the whitewashing of roofs. No doubt these recommendations, if carried out, would greatly, in many cases, improve the conditions of work. In a lecture at the Manchester School of Technology given by Professor J. Radcliffe recently, he passed some criticism on the report of the committee, especially as to the raising of the CO_2 standard to 12 volumes per 10,000, which he considered was a step in the wrong direction "as the available quantity of air for each individual was very small, and a great deal depended on the amount of moisture present, the source of the CO_2, and the freedom of the air from dust." He said that in many cases the injury to health resulted from uncleanliness, deficient ventilation, and constant changes of temperature directly due to the carelessness, indifference, and ignorance of the work-people. He had had direct experience of this. He favoured the mechanical systems of ventilation over the ordinary provisions for ventilation, heating, and humidifying of large factories and workshops. The difficulties generally arose from insufficient capacity of the plant, or from bad management. He thought also that some treatment of the yarn might be devised which would give good results without the presence of excessive moisture. There will always be some points on which opinion may differ, as, for instance, the question of humidity, to which Professor Radcliffe thinks too much attention has been paid, but the great mass of the workers seem to think otherwise. If the suggestions of the Committee are carried out the comfort and health of the operatives will no doubt be increased, provided that they do their share in maintaining the improved conditions under which they would work.

THE CLEANSING OF CAIRO.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

THE ORIGIN AND DEVELOPMENT OF THE SCAVENGING DEPARTMENT.—THE WANT OF FUEL.—THE DESTRUCTOR.—ONLY ONE-SEVENTH OF THE REFUSE TREATED.—MOUNTAINS OF FILTH ACCUMULATE UNDER THE CITY WALLS.—FLIES AND DUST FROM FOUL DUST-HEAPS INVADE THE STREETS.

PREVIOUS to the British occupation the care of keeping the streets of Cairo clean was confided to contractors, who certainly devoted some attention to the European quarter, but the natives were left to their own devices. Consequently household refuse was thrown out on the nearest convenient spot. Some householders employed Zibals. These men represent a characteristic Oriental institution. The ordinary visitor or tourist does not perhaps realise that one of the greatest of Egyptian difficulties is the want of fuel. Yet it suffices to travel on an Egyptian railway to observe that there are hardly any trees and no forests. There are picturesque clusters of palm trees, but these do not provide timber nor good fuel. Imported coal, on the other hand, costs £2 a ton at the least, and in a country where wages are sometimes as low as 5*d.* a day it is obvious that the mass of the people cannot afford to burn imported coal. Wood also has to be imported for building and industrial purposes, and is far too dear to be used as fuel. Consequently rubbish is the only cheap fuel available. The Zibals are the collectors of rubbish. Householders pay them a small sum to fetch and carry away vegetable and other household refuse which they sell as fuel, especially to the public baths, and in this way perform a service of the greatest social importance in the life of the Egyptian. In the big furnaces of the bathing establishments this rubbish can be burnt, otherwise it is difficult to see how Turkish baths could be provided for the people. In no way does Egypt, and especially Cairo, compare more favourably with Europe, and especially with England, than in respect to its public baths. There are 59 hammams or public baths in Cairo, and 49 of them were extensively frequented at the time of my visit. These are not new institutions, like the baths and washhouses in England, but are contemporaneous with the growth of Cairo itself. To the sanitary reformer nothing has been more disheartening than the statistics published from time to time showing how poorly the public baths built in British towns are frequented. It is true that of late years a bathroom is built in most private houses of a certain rental, and frequently even in workmen's cottages; but this is quite a recent innovation and one that is not always appreciated by those for whom it is provided. Indeed, there are frequent stories of the bath in model cottages being covered over to serve as a bedstead above and a coal-box or a rabbit-hutch below. In the East, on the contrary, it has been a long-established custom for the great mass of the people, the women and the children as well as the men, to frequent the hammam. This, however, would be impossible if some form of cheap fuel had not been forthcoming, and thus the questions of public baths and of the disposal of household refuse have been linked together. The natural process, therefore, in an oriental town is to burn some of the household refuse in the furnaces of the public baths. Scavenger dogs and, in Cairo, scavenger cats devour another part of it, and the rest is allowed to accumulate on any neighbouring waste ground. But when the population of Cairo largely increased, and so many Europeans came that a European quarter was created, some attempt was made by the employment of contractors to establish systematic scavenging.

Shortly after the British occupation, and following particularly on a severe outbreak of cholera, the matter of refuse disposal had to be considered seriously. The first person to be engaged on this work was Mr. A. H. Hooker, F.I.C., F.C.S., a pupil of the late Charles Heaton, lecturer on chemistry at Charing Cross Hospital. Here I may be allowed a personal word. To Charles Heaton I also am deeply indebted not only for my first lessons in hygiene, but for introducing me to this journal, where I helped him in his work as Special Sanitary Commissioner till ultimately he retired and I succeeded to his post. In such circumstances it will readily be understood the pleasure it afforded me not merely to find Mr. Hooker among the first to welcome my arrival at Cairo, but to learn that he had honoured the name of our common master by rendering eminent service to the cause of hygiene in Egypt. In 1883 Mr. Hooker had just terminated his work as secretary to the Cholera Commission under Sir Guyer Hunter and had served through the whole of the epidemic. He then addressed a lengthy report on the sanitation of Cairo and other towns to the Egyptian Government. In consequence Mr. Hooker, on the advice of Sir Evelyn Baring (now Lord Cromer) was appointed sanitary inspector for Lower Egypt. Late in 1884 Mr. Hooker was charged with the executive sanitation of Cairo and Alexandria, under the title of chief inspector of the whole sanitary services. His first act was to dismiss the contractors who were highly paid for doing very little. At the same time he submitted an estimate for the carrying on of a sanitary service which was approved by the Government. Having thus secured the means, he purchased carts, horses, mules, brooms, and many other necessary utensils, making these purchases personally. Then he organised on a military basis a small army of scavengers, appointing old soldiers as foremen or chiefs of gangs. The next step was to establish municipal workshops for the construction and repair of all the utensils, and municipal stables for the horses and mules. Machine brushes were introduced and all the watering service was taken over. Formerly there had been great carelessness in the measuring of the water purchased by the authorities from a private company to water the public streets. Mr. Hooker introduced a meter which automatically and accurately measured the amount of water used and thus realised a considerable economy. At Alexandria he established a similar service; indeed, at all the larger towns he imitated more or less fully what had been done at Cairo. The principle was to divide large towns into separate districts with their chiefs or controllers and a separate staff. To better maintain discipline and order the posts in the departments were reserved for the army, old soldiers being given the preference and having a right to enter the Municipal Service Corps. In 1890 the sanitary authorities took over surface sanitation—that is, scavenging—and the public works department became responsible for road-making. Shortly after this Mr. Hooker retired from the service, with the satisfaction of having accomplished a task of great public utility and beneficence.

Mr. Felix E. Powell is now responsible for the scavenging of Cairo. But circumstances have changed and are changing in the city and he very frankly recognises that the work in existing circumstances cannot be satisfactorily accomplished. When Mr. Hooker left the annual expenses of the service amounted to £16,000 per annum, now they amount to £47,372, and to do the work properly yet £13,000 more are needed, which is the same as saying that, if the figures may be accepted as a basis, at least a quarter of the necessary work must be left undone for want of means. Nevertheless, it is an inspiriting sight to visit the scavenging depot at Boulac. Here a fine international assembly of municipal machinery and appliances can be seen. There are English and German road-sweeping machines and thousands upon thousands of Italian hand birchwood brooms. The dryness of the climate causes the twigs to snap very soon and in the summer a broom will hardly last more than a week. It is quite a business merely to check these brooms, to hand out new ones, and to secure the old ones for the furnace at the destructor. At Cairo when asphalt or macadam is laid down in a street a small tax may be imposed in exchange and this covers the cost of keeping the street clean. But for the other streets which have only the bare earth no such revenue can be raised. Nor for the moment will any effort be made to pave these streets, for it has been decided to postpone all such expenditure till after the sewers are laid. Therefore, there is no credit open—i.e., no funds available—for sweeping unpaved streets, but under the Public Health Department there is a credit for prophylactic work, and the clearing away of filth from a street may be classified as work done for the prevention of disease. What such a task implies does not seem to have been realised in Cairo.

There has been a good deal of discussion about the water-supply of Cairo among the dwellers, and a little about the drainage of the city, but what was familiarly known in England as the dustbin problem has not been agitated in Cairo. Throughout France *la question des gadoues* holds a

prominent place in sanitary congresses and discussions, but in Cairo I could hardly find anyone who had taken it into consideration. As a consequence of such negligence and ignorance, Cairo is now face to face with dangers and difficulties arising from the accumulation of dustbin contents surpassing anything that I have ever seen in other towns. Though the scavenging is incomplete, because, as already explained, there is not enough money to maintain a sufficient staff to do the work thoroughly, the evils would not be so great if when the refuse is collected it was disposed of in a proper manner. As a matter of fact, there is only one destructor, which only deals with a very small part of the refuse. It is inconveniently situated near the ruins of the ancient aqueduct on the way to Old Cairo, and the refuse with which it deals is difficult of destruction. In Europe there is always mixed with the household refuse a certain amount of coal or wood cinders, and this makes it possible to burn the rubbish, and the dealing with the contents of our dustbins constitutes a large industry. At one time all the rubbish was carefully sorted, but this sorting is such dirty work that many sanitary authorities have preferred sacrificing what little monetary advantage it may afford and have resorted to the much cleaner process of cremation after rough sifting. The resulting clinkers are absolutely sterilised by the process of fusion in the furnace and can therefore be used for road-making, or in some cases are ground to powder, mixed with cement, and artificially converted into flagstones. This, however, cannot be done so readily at Cairo because there are no coal or wood cinders in the domestic refuse, and no less than 40 per cent. of the material collected is absolutely unburnable, and it contains much dust brought into the town on the feet of the camels, donkeys, and other animals that daily come to Cairo from country districts. This refuse is dragged with prongs over a grill so as to shake the unburnable matter through the iron bars into a receptacle underneath. The 40 per cent. of unburnable material was at one time sold as manure, but it contained too much salt and ammonia to be valuable. It has now been improved by mixing it with blood from the slaughter-house. The remaining 60 per cent. which can be burnt is burnt, but it consists largely of "soft core"—that is to say, of organic matter, such as cabbage stumps, potato peelings, orange peel, and other vegetable refuse. There is not much broken glass with it and practically no coal or anything much that will fuse, and only a very poor and useless sort of clinker is produced. The refuse from the markets and from the hospitals goes directly to the destructor without being sifted. The dust-sifters are paid £1 10*s.* per month as wages, which is a higher wage than what can be earned by working on the land or as a street-sweeper in the city. In England it has been found that the dangerous character of this work on account of the dirt and dust is in part compensated by the fact that it is done in the open air. In Egypt not only do these dust-sorters work out of doors but they sleep in the open air, except during the two or three months of winter when it is not so warm. For this purpose they do not, however, have to hire rooms or pay rent. They collect from the refuse which they sort old oil tins which they flatten out, and with bits of old sacking and fragments of carpets make up the walls and roofs of little huts which have for their main support old poles, planks, and any other waste material that they may chance to find. In these extraordinary and wretched hovels these men will sleep when the weather is exceptionally cold.

Though the clinkers produced by the destructor are not good, a powder is obtained which when mixed with water and a little lime makes a cheap inferior mortar which is a staple article used in building small native houses and known in the trade as *kosromel*. Then there is a cremation chamber which renders great service for the destruction of condemned meat and carcasses. When regulations to prevent the spread of rabies first came into force the bodies of about 500 dogs were cremated here in the course of one month. Now there are not more than about 150 destroyed per month. Part of the heat of the destructor is used to generate steam which supplies the needs of the neighbouring public abattoir. Some of it is used to drive a fan which produces a blast on the furnace. Thus it may be said that in spite of the special difficulties just described satisfactory work is done by the destructors and as far as it goes we have here a solution of the problem. Unfortunately it does not go far enough.

Though the scavenging work is not done thoroughly and a good deal of dirt and refuse still remains lying about, especially in some of the poorer quarters, in small streets and blind alleys, nevertheless about 600 cart loads are removed every day. It is estimated that these loads weigh, on an average, a third of a ton, and that 210 tons weight is carted away from Cairo every day in about 600 cart loads; but of this quantity the destructor can only deal with 30 tons per day. Only one-seventh of the total is satisfactorily treated. This is an appalling fact. It should be known to every citizen of Cairo and become a subject of daily concern, and of agitation until more effective measures are adopted. A portion of this refuse is sold to the public baths and this realises a revenue of £600 a year while causing a terrible nuisance which I will describe later. The last figures I saw showed that the baths were taking 189 cartloads of refuse per day. There thus remains a growing daily accumulation of more than 300 cartloads, more than 300 cubic metres, of dirty, dangerous matter. Yet it is not treated in any way. It is not cremated, it is not even sorted or removed to any distance. Incredible as it may seem, this refuse is simply dumped down in the immediate neighbourhood of Cairo. Thus perfectly flat suburbs have been in the course of time converted into hilly districts, and the northern side of Cairo is now surrounded and hedged in by mountains of filth. The picturesque citadel of Cairo was pointed out to me and I was told there were cannon there that could reduce the city to ashes in a very short time. In the meanwhile, it is

FIG. 1.

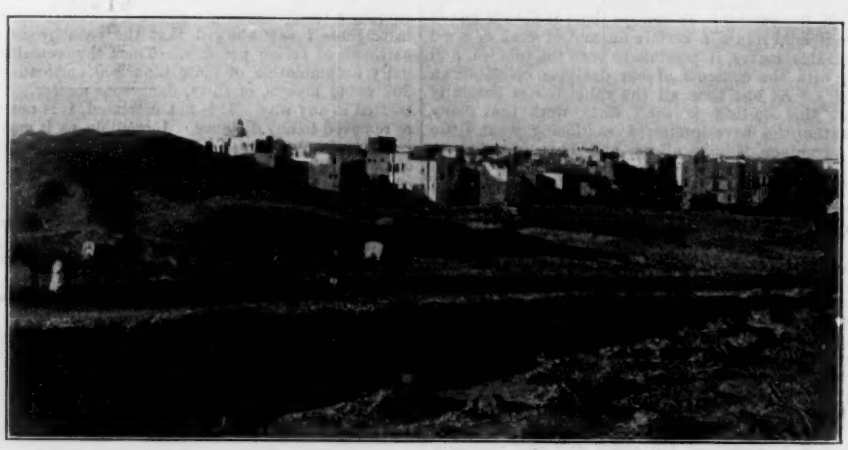
Railway passing through dumping ground upon and alongside of large mountains of rubbish.

the city that has brought its daily output of ashes to the citadel, and the mountains thus constructed are now nearly as high as that on which the historic fortress stands. If the town were to be bombarded by the fortress some warning would be given and the inhabitants would have a chance of escaping. The citizens of Cairo have, however, neither respite nor chance of escape from another sort of bombardment to which they are daily exposed. Here on these hills heavy artillery is constantly discharged, and it is as if more than 300 shells exploded every day, for when each of the 300 carts is tilted up a cloud arises consisting not of gunpowder smoke but of deadly dust. This is taken up by the wind and carried to the streets and open windows of Cairo. As this incredible state of affairs may elicit accusations of exaggeration I put in my camera as a witness. To the north of the citadel and north-east of Cairo there are such large hills that doubtless, and judging from a distance, most persons have mistaken them for offshoots of the Mokattam range of mountains. As a matter of fact, they are enormous dust and rubbish heaps, and these are now quite close to the inhabited houses. The largest dust-heap will be seen on the left of a railway line that has likewise been laid in the midst of all this filth. (See Fig. 1.)

Here it assumes the proportions of a veritable mountain. Another of my photographs shows some of the scavengers' carts commencing the ascent of these hills. (See Fig. 2.) The road is made of rubbish, and on both sides the household refuse accumulates. Formerly all this ground was quite flat. Then I have taken a photograph of the extreme limit, where empty tins, broken pots, and other rubbish comes tumbling down into a rope-walker's yard and almost against the very walls of a small factory. (See Fig. 3.) Here, making string and ropes, a number of young children are at work, and they breathe the dust fresh from these breeding grounds of millions of flies which convey to the town the germs they collect on the dust-heaps.

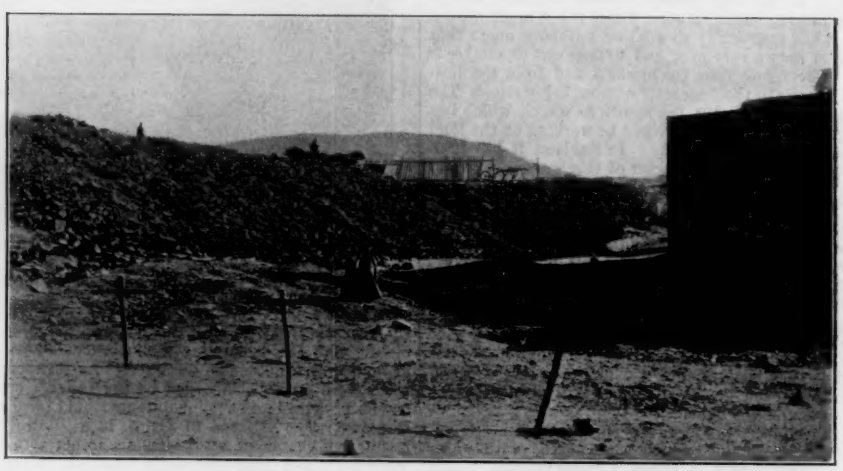
The readiness with which flies breed here is in itself a proof of the foul nature of the rubbish. But we have a further proof in the fact that it ferments and becomes so hot that spontaneous combustion sets in. These mountains of dirt are actually on fire. It is only necessary to stand still for a moment to feel the heat of the fire even through thick-soled boots, while if a walking-stick is pushed down some 10 or 12 inches the hole makes a small chimney from which smoke issues when the stick is withdrawn. Considering this

FIG. 2.



The scavenger carts bringing refuse to mountains of rubbish accumulated close to the north-east side of Cairo.

FIG. 3.



Limit of the dumping ground, where the rubbish falls into a rope-walker's yard where children are employed.

mountains of town refuse. The carriage in which I rode will be seen above the lower dust hills, the higher mountains of rubbish being seen in the distance. I shall never forget the appearance of the coachman's back. It was not possible to tell the colour of the cloth of which his coat was made. As he had remained still for some time hundreds, nay thousands, of flies had settled on the smooth expanse of broadcloth that covered the parts of his back which he could not reach to beat them off. Flies form another of the dangers created by these mountains of refuse. Not only is the dust blown from them into the town, but it forms the phenomenon, it will be said that by spontaneous combustion all the vast accumulation of rubbish is automatically purifying itself. The best of all sterilisers—namely, fire—should render it perfectly clean and safe. Though I am not aware that any scientific experiments have been made to prove that this is so, still I am quite ready to believe that deep down in these mountains, where everything that could burn has been consumed, the heat was sufficient to sterilise what remains; but this is the work of years and does not apply to the surface. It is the newly emptied cartloads of freshly collected refuse that constitute the principal danger. Here will be found not

only all the animal and vegetable matter constituting kitchen refuse, &c., but there is also some fæcal matter and specifically dangerous things, such as pus-stained rags, and foul discarded fragments of clothing that were worn by the unhealthy, and from these disgusting fomites pathogenic germs are blown towards the neighbouring streets and houses or conveyed there by the flies. Then, again, some private enterprise comes here with carts and workmen and pays a small sum to be allowed to cart away a little of this rubbish. This seems to indicate that it is of value as manure. It would be well if these people, instead of taking a few loads, could cart it all away, for who ever heard of surrounding—of hedging in—a town with mountains of manure?

(To be continued.)

NEWCASTLE-UPON-TYNE.

(FROM OUR OWN CORRESPONDENT.)

Tuberculosis and the Milk-supply.

THE Newcastle corporation sanitary committee recently received a deputation from the Northumberland and Durham Dairy Farmers' Association respecting tuberculosis in dairy cows. It is stated that the committee, in its reply, felt that the doubts expressed by the deputation as to the efficacy of the tuberculin test for tuberculosis were due to misapprehension, and it regarded as remote the possibility of the tubercle bacillus being accidentally introduced into the milk after it had left the farm. The committee did not agree with the suggestion of the deputation that the question of taking legal proceedings against a member of the association should be settled by joint investigation with the association. The committee also refused a further proposal from the association—to take more samples from individual cows whose mixed yield had been shown to be tuberculous—on the ground of the loss of six weeks' time for the purpose of inoculations, or, including the time for the first tests, three months in all, during the later half of which the consumers of that particular supply would be getting milk known to be tuberculous.

Payment of Vaccination Officers.

The Newcastle board of guardians at one of its recent meetings had under consideration the question of payment of vaccination officers. It appears that a vacancy has arisen in the western district, and the finance committee of the board had recommended that the new officer should be paid a fee of 2*s.* 6*d.* per case instead of 4*s.* 6*d.* as hitherto. The committee stated that the average payment for vaccination over the last five years was £422 per annum for the particular district; that the minimum fee of 2*s.* 6*d.* had been fixed by the Local Government Board; that the western district had a high birth-rate; and suggested that, whilst it did not wish to interfere with the existing scale of payment in other districts, this appointment was a new one, and if paid on the lower scale a saving of £120 per annum would be made for the ratepayers. The discussion which followed on a motion to adopt the recommendation was free and apparently stormy, the advocates for the lower fee alleging that a good man could be obtained, that "medical men would tumble over each other to get the post," that when letting tenders they took the lowest, that the neighbouring town of Gateshead had adopted the lower scale, and finally, that the appointment was merely an adjuct to private practice. Those who wished the fee to remain at 4*s.* 6*d.* were emphatic in considering that the proposed change would mean "sweating and blacklegging," that other towns, Sunderland, York, and Tynemouth, paid 4*s.* 6*d.* and 1*s.* registration fee; Bradford, Gloucester, and Middlesbrough paid 5*s.* and 1*s.*; Alnwick and Felton, 7*s.*; the Castle Ward of Northumberland, 7*s.* 6*d.*; and in London fees were paid up to 10*s.*; that the fees of the new officer could hardly be changed without also lowering those of the officers of the other districts. The resolution to adopt the half-crown rate was defeated by 22 votes to 18, one member not voting. An amendment that 3*s.* 6*d.*, plus the other amounts, should be paid was also lost by 20 to 15. The rate therefore is to remain at 4*s.* 6*d.* per case.

Royal Victoria Infirmary.

A quarterly Court of Governors of the institution was held on May 27th at the infirmary, Sir Riley Lord presiding. Sir Thomas Oliver was reappointed an honorary physician and Sir Riley Lord was made a president of the infirmary. The latter, in his remarks to the meeting, alluded to his hope that the institution might at no very distant date be in the possession of a convalescent home, to which patients might be sent to continue their treatment after their short stay in the building, which shortness was necessitated by the pressure on the beds. The financial statement was presented to the court, and showed that the average number of patients in the infirmary for the past four months had been 654, as against 619 in the corresponding month, of last year. The total income for the same period was £10,815, against £8969 last year, while the total expenditure for the period had been £10,952, as compared with £10,276 last year. The expenditure therefore exceeded the income by £137, while last year for the same months the deficit was £1307. The contributions made by the workmen of the district continue to increase.

June 8th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Edinburgh Royal Infirmary and the Budget.

AT the weekly meeting of the managers of the Edinburgh Royal Infirmary Dr. R. McKenzie Johnston submitted a statement showing that the increase in the price of alcohol proposed in the Budget would affect the infirmary to the extent of £112 per annum. This increase was only to a small extent due to the use of alcohol as a beverage, but applied to preparations in which alcohol was used. For anæsthetics alone it meant an increase of £50. The result of the tax meant practically an increase of 10 per cent. on drug expenditure. A letter was read from Dundee Royal Infirmary asking support to get some concession in regard to the making of tinctures and other pharmaceutical preparations. The subject was remitted to the medical committee for report. A proposal by Dr. A. Veitch of Gilmore-place to provide motor-car rides for patients on Wednesdays was accepted with thanks. Dr. Veitch made similar arrangements last year, which were successful and highly appreciated. Dr. Veitch has interested a number of private motor-car owners in his scheme, who have readily placed their cars at his disposal for the purpose. He hopes to make the scheme big enough to include the nursing staff if possible.

Complimentary Dinner to Dr. Stuart Macdonald, Edinburgh.

Dr. Stuart Macdonald, who was recently appointed to the lectureship on pathology in the Newcastle School of Medicine, was entertained, on the evening of June 3rd, by a number of his friends and colleagues in Edinburgh at a dinner in the Caledonian Station Hotel. Dr. Alexander Bruce occupied the chair. Dr. Macdonald has been for a number of years an extra-mural lecturer and teacher of pathology in the Edinburgh school. He was for a time an assistant pathologist at the Royal Infirmary, and up to the present was pathologist to the Royal Hospital for Sick Children. He is a graduate of Edinburgh, and has made valuable contributions to the literature of epidemic cerebro-spinal meningitis and of delayed chloroform narcosis. He leaves Edinburgh with the hearty good wishes of his Edinburgh colleagues for a prosperous and distinguished career in connexion with the North of England School of Medicine.

The Edinburgh Royal Maternity Hospital.

The annual meeting of the supporters of this charity was held on June 3rd, Principal Sir William Turner, K.C.B., presiding. Dr. J. W. Ballantyne, submitted the report. The number of patients treated in the hospital was 549; at their own homes 663; at the Leith branch 437. There had been during the year 13 maternal deaths among the indoor cases, none among the outdoor. 48 nurses were trained and training had been given to 47 students. The financial report showed that the income had been £1902 and the expenditure £2316. During the year the Early Notification of Births Act had come into force and the medical staff had aided the health officer of the city by supplying him with information which enabled the health visitor to get in touch with patients who had been in hospital. The directors were satisfied that

benefit would accrue to mothers and infants by this arrangement.

Tuberculous Patients at Edinburgh City Hospital.

It is gratifying to be able to record that the public health committee, which is ably presided over by Dr. G. M. Cullen, has agreed to recommend to the town council that the number of beds at the City Hospital for cases of pulmonary phthisis be increased from 50 to 62, and that six pavilions for the open-air treatment should be provided. Any increased accommodation for these cases will be welcomed by those who know the needs of a city like Edinburgh.

Conference on Medical Supervision of School Children in Lanarkshire.

The Lanarkshire authorities are making an effort to organise the medical supervision of school children in the county on a satisfactory and businesslike basis. As a first step in the process the secondary education committee of the county has asked the county council that the scheme be given the assistance of the county medical officer. The idea is to have at the head a man who will be in no competition with local practitioners. It is suggested that he should supervise the beginning of the scheme, and afterwards, when it is organised, his work will resolve itself into mere direction. Details of the scheme have been given in a circular forwarded to the school boards of the county, and a conference of the authorities interested in the matter was held last week. At this conference 35 out of the 48 school boards of the county were represented, and it was decided that the scheme would be proceeded with if the committee received a certain number of favourable replies from the various boards after the proceedings at the conference had been reported to them. It is estimated that the number of children who will have to be medically examined amounts to three-eighths of the total school population. That means that 38,193 children in the county will fall to be examined, and it is considered that a staff of from five to seven medical inspectors will be required. Assuming the coöperation of all the school boards in the county the cost will lie between £2500 and £3000 per annum. A full staff may not be necessary at first, but whatever the cost may be the expense will fall upon each board in a proportion based upon the average number of scholars on the register. The county will be divided in such a way that each part will receive an efficient service.

Proposed Paisley Lunacy District.

The parish council of Paisley has decided to approach the General Board of Lunacy to have Paisley parish formed into a lunacy district. Formerly in its asylum at Riccartsbar it has been in the habit of receiving boarders from the various parishes round Paisley, but these parishes have now combined and built an asylum at Dykebar. As boarders have been a source of considerable revenue in the past, if the parish were converted into a lunacy district the council would be in a position to make up to a certain extent the deficiency.

June 8th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Tuberculosis in Dublin: Suggestions of the Public Health Committee.

THE public health committee of the Dublin corporation has just issued its report (June 5th) on the subject of tuberculosis in Dublin. It refers to the fact, already brought to light on several previous occasions, that "very often consumptives sleep in the same room, and sometimes in the same bed, with healthy members of their families," and indicates the obvious truism that this "close contact of persons suffering from pulmonary tuberculosis is no insignificant factor in spreading this formidable disease." The medical superintendent officer of health has suggested the providing of a separate room for the consumptive; and that such rooms should be constituted "temporary places for the reception of the sick," under the provisions of Section 155 of the Public Health (Ireland) Act, 1878. The report states that in 1908 956 persons died from pulmonary consumption in the City of Dublin. The great majority of the deaths occurred among the poorer classes, especially in the families occupying single-room dwellings. The provision made for consumptives in our metropolitan hospitals is small in comparison with the number of persons affected with pulmonary tuberculosis. Then the joint sanatorium which is shortly to be erected will accommodate some 50 patients only, at a cost of about £5000 per annum. The report expresses the belief that "on an average a room for the reception of a consumptive person will not cost more than 2*s.* 6*d.* per week, or £6 10*s.* a year. The equipment as bedroom would not exceed £3 10*s.*" It proceeds to state that if the committee were "empowered to expend £200 a year in hiring, equipping, and maintaining rooms 20 consumptives could be provided for," adding the suggestion that this sum should be placed at its disposal "as a tentative effort to lessen, in the direction indicated, the spread of tuberculosis." The persons provided for would, in most cases, be those employed in some industrial occupation; occasionally a consumptive after return from hospital or sanatorium. The suggestion is surely a feasible one, and in the present state of affairs it is worthy of a fair trial.

Health of Belfast.

At a meeting of the city corporation of Belfast held on June 1st it was reported that between April 18th and May 15th, 1909, the death-rate from all causes in Belfast was 20·0, 7·8 from chest affections, and 0·8 from zymotics per 1000. There is a marked diminution in fever cases (especially typhoid), but the mortality from chest affections is in excess of the normal rate. In reference to the late Health Commission the finance committee reported that it had informed the Local Government Board that, acting on counsel's opinion, it felt it was not liable for a sum of £600, but the Earl of Shaftesbury, who is one of the aldermen, spoke very decidedly against entering into litigation with the Local Government Board. Neither the Local Government Board nor the Treasury forced the Commission on them, he said, but a number of their own citizens, and they had already agreed to pay the principal portion of the expenses, and the present sum in dispute was only £600. Lord Shaftesbury said that the idea was that the corporation was not to pay for those members of the Health Commission who came from outside Ireland (Colonel Harding, the chairman, Dr. A. K. Chalmers of Glasgow, and Dr. L. W. D. Mair of London), but he said it was of great advantage to the city to have these men. Everyone would surely admit that their expert knowledge was a real asset in such an inquiry, and the result was that they obtained as good an opinion regarding the health of the city as could possibly be had. They must agree that the result of the inquiry was of great benefit to the city. Was it, therefore, dignified—was it a very high attitude to take up—to say, "We paid £800, but we won't pay the other £600"? It was not edifying for an important city like theirs to assume this attitude, which implied, "We admit that the Commission was of benefit and that the report was of use, but we won't pay this £600." Alderman Sir James Henderson, D.L. (an ex-mayor), in supporting Lord Shaftesbury, said the three gentlemen of the Commission—namely, Colonel Harding, Dr. Chalmers, and Dr. Mair—in respect of whose expenses this sum of £600 was in dispute, were of the greatest possible assistance as members of the Commission; in fact, he did not think they could have done without them. Ultimately, the chairman of the finance committee was obliged to take the matter back, and a special meeting of the corporation is to be called to decide the question in order that there shall be no more delay.

Royal Victoria Hospital, Belfast.

Saturday, May 29th, was "Hospital Saturday," and £720 have been paid in already, which is about the same sum as was paid at the corresponding date of last year.

The Kelvin Statue.

The acrimonious dispute regarding the site for the statue of Lord Kelvin was settled on June 2nd, when at a public meeting of subscribers held in the Belfast City Hall (the Lord Mayor presiding), the Chancellor of the Belfast University (the Earl of Shaftesbury) withdrew the claim made by the University, and it was unanimously decided to place the memorial in the grounds of the City Hall.

The Dufferin Children's Hospital.

The new institution now known as the "Dufferin Children's Hospital," in connexion with the Belfast workhouse, was

appropriately opened on June 3rd by Lady Hermione Blackwood, youngest daughter of the late Marquis of Dufferin and Ava. The building, which stands on a beautifully open and healthful position isolated from the other buildings on the workhouse premises, is three storeys in height, built of red brick, with balconies in front, and has eight wards to accommodate altogether 200 children. Children suffering from complaints making it necessary can be isolated, not alone in the wards but in the lavatory annexes. The windows are suitably guarded and there are special exits in case of fire or emergency, and a special system of heating and electric lighting has been installed. Altogether the whole surroundings and the arrangements provided in connexion with the hospital have been so carefully thought out and the details so completely executed as to reflect the highest credit on the guardians, especially the lady members. The chairman of the board of guardians (Mr. J. S. Bryars), who presided, having welcomed Lady Hermione Blackwood, described the building, which that lady formally opened with an interesting address on the importance of looking after the physical and moral improvement of children. Sir John Byers, in moving a vote of thanks to Lady Hermione Blackwood, joined with her in complimenting the members of the Belfast board of guardians on their splendid medical work. They were the first body of their kind in Ireland to isolate consumptives, and they had erected a sanatorium which was a credit to them and to Belfast and an example to the whole of Ireland. They had also built a maternity hospital, a nurses' home, and, to crown all, on that day those present had an opportunity of seeing opened the largest and best-equipped children's infirmary in Ireland. Miss J. Clark seconded the vote, which was very enthusiastically carried. Subsequently the members of the board and the large number of visitors present were hospitably entertained to afternoon tea by Mr. J. S. and Mrs. Bryars.

June 8th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Pierre Budin Foundation.

THE inauguration of the building of this foundation took place on May 24th under the presidency of M. Emile Loubet, late President of the Republic. The establishment is organised for the reception of infants accompanied by their mothers. The infants will be weighed and examined periodically by physicians, who will overlook and give directions for their upbringing. Suckling by the mother will be held up as the most suitable method of feeding, but in case of need this will be supplemented or replaced by distributions of milk. Madame Budin was present, and M. Paul Strauss, senator and president of the institution, spoke first, and gave an account of the objects of the foundation. Afterwards M. Leon Labbé, M. Maygrier, M. Henri de Rothschild, and M. Landouzy gave details of the life and work of Professor Budin. Then M. Lionel Laroze recited an ode by Jean Richepin to the memory of Budin. M. Loubet wound up the proceedings by appealing to all those present to aid in the salvation of infant life. After the meeting the various buildings were inspected.

The Destruction of Tubercle Bacilli in Bread.

At a meeting of the Society of Biology held on May 15th M. Auché gave an account of some experiments which he had made as to the destruction of tubercle bacilli in bread. He mixed some tuberculous sputum with dough, which was then baked. Apparently the heat of the baking destroyed the bacilli, for guinea-pigs which were inoculated with a bouillon made with some of the bread-crumb were not infected with tubercle. M. Auché does not, however, consider that this experiment proves that bread made from tuberculous dough is necessarily safe, for in the case of large loaves the central parts may not always attain the temperature necessary for the destruction of the bacilli, and besides the temperature at which bread is baked varies in different bakeries.

An Old Soldier and Unqualified Practice.

The Association of Medical Men of the Seine has recently prosecuted an old soldier, aged 81 years, a Zouave named Jacob, for illegal practice of medicine. The tenth Chamber of the Tribunal, the court which heard the case, has just given judgment. The judgment states that the Zouave was prosecuted for having habitually taken part in the treatment of sick persons, that clothed in a white robe he showed himself to those who came to consult him, that he fixed his eyes on them and invoked certain spirits whom he called "superiors," that he asked his patients no questions, neither did he prescribe any particular *régime* nor any remedies. The rest of the picturesque description of the Zouave's behaviour notes that he used to pass between the benches upon which his visitors were sitting and touch them lightly with his hand; that he collected such moneys as they were willing to give, but that such offerings were entirely voluntary; and that the séance terminated by his advising them in general terms to drink neither wine nor alcohol, to eat nothing but vegetables, and never to take any drug. As he always did the same thing and took no heed of what was supposed to be the matter with his visitors Jacob could not be held to "treat the sick," and the court found therefore that there was no violation of the law. The syndicate of medical men therefore had to pay the costs.

An Experimental Research on the Method of Action of "Altitude Cures."

At the Hospitals' Medical Society on May 28th M. G. Russ read a paper on a study which he had made to determine the effects on the respiratory and circulatory and metabolic functions during a long stay at a high altitude. The subjects of the experiments remained in good health and only suffered from mountain sickness in an insignificant degree. Study of the respiratory exchanges at rest and in the course of the least effort at muscular work showed that the hypothesis of an increased metabolism (*combustion intra-organique*) in high mountain climates cannot be upheld. Even at the considerable altitude of 4350 metres the respiratory exchanges remained the same as at sea level, all other conditions being equal. The increase in pulmonary movement in a person at rest is nearly constant at a high altitude, but in the majority of cases it is inconsiderable, even at the height already mentioned. It is not necessarily accompanied by an increase of amplitude in the inspirations, and very often it only constitutes an extra exertion for the person without any compensatory advantages in aerating the ineffective regions of the lung. On the other hand observations made on healthy people should not be applied too hastily to sick ones, especially to tuberculous patients whose pulmonary movements are always exaggerated. Muscular work done at a height causes a much greater increase in the "respiratory debit" than when it is performed at sea level. Mountain walks form the best method of rendering an atelectatic lung, or one bound by adhesions, permeable to air. In four guinea-pigs kept for 24 days at Chamounix and nine days in the observatory at the top of Mont Blanc, M. Russ and M. Davesne were unable to determine any considerable erythrocythæmia by taking blood from the heart. The appearance of a small number of nucleated red corpuscles in these animals is apparently due to the effect of cold and not to any excitation of the hæmatogenic bone marrow by the deficiency of oxygen in the blood. At high altitudes inhalation of oxygen constitutes the specific treatment for mountain sickness and is an immediate cure for slight attacks. This procedure only influences respiratory movements in a transitory manner, but exercises a very marked action on tachycardia due to altitude. Acclimatisation to the rarefied air of mountain heights is essentially a process of accustoming the nervous centres to deficiency of oxygen in the blood stream.

Subcutaneous, Intramuscular, and Intravenous Injections of Alkaline Mineral Waters.

M. Fleig communicated a further note on his researches into this subject to the Therapeutical Society on May 26th. He has injected into the veins of men the waters of Vals, Châtel-Guyon, and Saint Nectaire in doses of 200 cubic centimetres without making them isotonic, and up to 400 cubic centimetres with that precaution. These facts prove the safety of utilising intravenous injections of alkaline mineral waters for therapeutic purposes on a large scale. M. Fleig proposes to make the waters isotonic by using sugar when they contain substances chemically incompatible with salt.

June 7th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

A Simplified Serum Reaction for Syphilis.

Dr. Schürmann, of the Institution for Experimental Therapy in Düsseldorf, writing to the *Deutsche Medizinische Wochenschrift*, says that in the course of attempts to modify Wassermann's reaction for syphilis he has found that the lactic acid is of importance for the reaction, but that it cannot be ascertained by the usual Uffelmann reagent because of the presence of hæmoglobin in the serums. He has now devised another way in which 0·1 cubic centimetre of serum is diluted in 3 cubic centimetres of a solution of chloride of sodium of 0·8 per cent. strength and a drop of perhydrol is added. The serum is then mixed with 0·5 cubic centimetre of a reagent consisting of 0·5 part of phenol, 0·62 part of a 5 per cent. solution of chloride of iron, and 34·5 parts of distilled water. This reagent is of a blue-violet colour, and can only be kept for a very short time even in a stoppered bottle. Normal blood serum brought into contact with the reagent shows only a slight greenish hue on the top, which completely disappears on shaking, the mixture being left absolutely clear and transparent. With syphilitic serum the reaction is quite different, for when it is mixed with the above reagent a brownish-black colour appears, which becomes still more intense on shaking the glass. Syphilitic serum, moreover, froths after being brought into contact with the reagent. The reaction becomes visible in from one to two minutes. Up to the present time 34 samples of serum have been examined by this method, the result being that serums which showed a positive Wassermann reaction turned the reagent dark brown. Serum from scarlet fever patients did not give a positive reaction; the serum of sheep, guinea-pigs, and rabbits also proved negative.

Collective Investigation on Appendicitis.

The Berlin Medical Society some time ago made arrangements for a collective investigation into the cases of appendicitis which happened in 1907, and the results of the investigation were communicated at a recent meeting of the society by Professor Albu and Professor Rotter. Professor Albu said that the number of cases of appendicitis had increased enormously since the "nineties" of last century. Whilst in the year 1897 there were only 1847 cases registered, the number rose to 3081 in the year 1902 and to 6061 in the year 1907. It has been alleged that the increase was apparent rather than real, being in actual fact due to improvements in diagnosis. This argument was true only to a certain extent, but the increase in the number of cases could not be accounted for wholly by improvement in diagnosis, and the explanation undoubtedly was that the disease has become endemic. Of the patients suffering from acute appendicitis 9·3 per cent. were under 10 years of age, 34 per cent. were from 10 to 20 years, 29·6 per cent. were from 20 to 30 years, 17 per cent. were from 30 to 40 years, and 10 per cent. were above 40 years. For chronic appendicitis the acme was in the age period from 20 to 30 years. With regard to the etiology, it was stated that previous infectious diseases were only seldom registered; an accidental injury was acknowledged in only three cases. The cause of the disease was apparently enterogenic. In 55 per cent. of the cases there was constipation, in 62 per cent. there was pyrexia, and in 57 per cent. there was increased frequency of the pulse. Suppuration developed in 2 per cent. of the acute cases. Dr. Rotter, referring to the therapeutic results, said that 2705 cases of acute appendicitis had been registered, of which 2365 were treated in hospitals and 340 at home. In the first category there were 214 deaths, or a mortality of 9 per cent.; in the latter category there were six deaths, or a mortality of 1·7 per cent. There were 1344 cases operated on, with 197 deaths, or a mortality of 14·6 per cent. With regard to the stage at which the operations took place 105 were performed on the first day, with one death, or a mortality of 0·9 per cent.; 318 were performed on the second day, with 23 deaths, or a mortality of 7 per cent.; the entire mortality of the two first days being therefore 5·6 per cent. On the third day 238 operations were performed, with 23 deaths, or a mortality of 10 per cent.; and after the third day 683 operations were performed, with 150 deaths, or a mortality of 20 per cent. The death-rate following operations after the second day was therefore 18·8 per cent. In cases under ten years of age the death-rate was 17·4 per cent., from 10 to 20 years it was 5·3 per cent., from 20 to 30 years it was 10 per cent., from 30 to 50 years it was 21·7 per cent., and above 50 years it was 80 per cent. Operations *à froid* have been performed for chronic appendicitis in 87 cases, and during an interval in 805 cases, the actual number of deaths being nine, or a mortality of 0·9 per cent. The best results were obtained by early operations.

Congress of Naturalists and Medical Men.

The forthcoming meeting of the German Association of Naturalists and Medical Men will be held at Salzburg in Austria from Sept. 19th to 25th. In addition to the scientific proceedings, the programme of the meetings includes as usual a variety of social entertainments. The ancient and celebrated city of Salzburg, with its splendid alpine surroundings, will certainly attract many visitors from Germany, Austria, and abroad. After the meeting excursions will be made to the well-known health resorts of Reichenhall and Gastein. Medical men desiring to take part may apply for further particulars to the local committee or to Dr. Würtenbergen in Salzburg.

June 7th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Vaccine Complicated with Foot-and-Mouth Disease.

THE Bureau of Animal Industry of the United States Department of Agriculture has published the results of an investigation as to the origin of an outbreak of foot-and-mouth disease among cattle which prevailed during the early part of last winter. It was found after very careful investigation that it had its origin in calves used for the propagation of small-pox vaccine virus which had been contaminated with the virus of foot-and-mouth disease. The contaminated virus was traced to vaccine which had been imported from a foreign country. The disease was finally traced to calves that had been used for the cultivation of vaccine virus by a large Detroit firm. On further inquiry it appeared that this firm had secured a supply of vaccine virus which was imported by a firm in Pennsylvania. From the stockyards of the Detroit firm, where the calves which had developed the disease were kept, the disease spread widely. The cattle which were vaccinated by the virus from both of these firms all developed the foot-and-mouth disease. The laboratories of the Public Health and Marine Hospital Service immediately began an examination of all the supplies of vaccine virus in the country and now report that there is no impure vaccine on the market.

The Proposed National Public Health Department.

The efforts to secure the establishment of a National Public Health Organisation have resulted in the designation by the President of the Surgeon-General of the Public Health and Marine Hospital Service as a special commissioner to prepare a plan by which all of the agencies of the Federal Government which have duties relating to the public health may be consolidated into one department. The department over which the Surgeon-General presides, "The Public Health and Marine Hospital Service," has been doing excellent national sanitary work, and only requires such reorganisation as will enlarge the scope of its jurisdiction, increase its equipment, and give it adequate powers to make it a most efficient department of health. The proposition which meets with most favour is the consolidation of several bureaux, having duties which nearly or remotely relate to the public health, and now scattered among the other departments, into an independent public health organisation. This plan would be most readily effected if the Public Health and Marine Hospital Service were taken as the unit in the consolidation act and the various allied branches of public health service were incorporated in its organisation. This method of securing an adequate National Public Health Department meets with general professional approval, and it is anticipated that the Surgeon-General will finally report such a scheme to the President.

Tuberculosis Increasing in Rural Districts.

The New York State Department of Health reports that tuberculosis is increasing in the rural districts and diminishing in the cities of the State. On the basis of the average for five years from 1901 to 1905, the death-rate in the cities of the State fell from 203·5 to 185 per 100,000, while in the country districts there was an increase from 112·7 to 123 per 100,000. This remarkable difference in the death-rate from tuberculosis of the two classes of people is attributed to the stringent sanitary measures adopted and enforced by the health authorities of cities as compared with the rural districts. Somewhat of this change is undoubtedly due also to the campaign of education which has been in progress in the cities by means of lectures and exhibitions.

The Transmission of Germs by the Mails.

The United States Post Office Department has adopted stringent measures in the transportation of pathological specimens to avoid the possibility of the transmission of the germs of disease to those engaged in the service. In the first place, the postal service will handle cultures or specimens only when destined to United States State or municipal laboratories. Specimens intended for medical laboratories other than public institutions must be transmitted by messenger or express. Liquid cultures or cultures of micro-organisms in media that are fluid at ordinary temperature (below 45° C. or 113° F.) are unmailable; such specimens may be sent in media that remain solid at ordinary temperature. On the outside of every package of diseased tissues admitted to the mails shall be written or printed the words: "Specimen for bacteriologic examination; this package to be treated as letter mail." No package containing diseased tissues shall be delivered to any representative of any said laboratories until a permit shall have first been issued by the Postmaster-General certifying that the said institution has been found to be entitled, in accordance with the requirements of this regulation, to receive such specimens. Minute rules are given in regard to the construction and preparation of packages used for conveying through the mails pathological specimens, in the moist and in the dry state, for bacteriological examination for diagnosis in cases of suspected diphtheria, tuberculosis, and other communicable diseases.

Decline of Attendance on a Homœopathic School.

The University of the State of Minnesota has maintained for 20 years a separate homœopathic department, devoted to teaching all the medical courses of the junior and senior years. Latterly the attendance has gradually declined until but three students made up the class. The regents of the University have recently abolished the homœopathic department and created two elective chairs in homœopathic materia medica and homœopathic therapeutics. It also provided that students electing such instruction should be granted diplomas specifying that they were in homœopathic medicine.

Honouring the Memory of Dr. Ephraim McDowell.

The American Gynecological Society, at its recent meeting in this city, celebrated the centennial of Dr. Ephraim McDowell's first operation of ovariotomy by a banquet. A memorial address was given by the President of the society, Dr. J. Riddle Goff, and addresses were given on the "Successors of McDowell" in America and in Europe.

May 26th.

Medical News.

UNIVERSITY OF OXFORD: DIPLOMA IN OPHTHALMOLOGY.—The Board of the Faculty of Medicine gives notice that it has approved the following regulations for the diploma in ophthalmology (see Statute approved by Convocation on May 11th, 1909, *Gazette*, p. 614):—

1. The examination shall be conducted partly in writing, partly *viva voce*, and shall be partly practical. The subjects of the examination shall be: (1) the dioptrics of the normal and abnormal eye; (2) abnormalities and diseases of the eye and its appendages, their etiology, pathology, diagnosis, and treatment; (3) the relation of ophthalmology to general medicine; (4) clinical cases illustrating (1), (2), and (3); (5) ophthalmic surgery.

2. The fee payable by a candidate on admission to the examination, on the first occasion on which he offers himself, shall be £15, unless he is a graduate of the University, in which case it shall be £10. Any candidate who has paid such fee, and who offers himself for examination again on a subsequent occasion, shall pay a fee of £5 only.

3. The examination shall be held annually and shall commence on the third Tuesday in the month of July. The assistant registrar shall give at least one month's notice of the time and place.

4. The names of candidates shall be received by the assistant registrar. They must be sent on forms provided by him for the purpose and to be obtained at his office, so as to reach him on or before June 30th preceding the examination. The statutable fee must be paid at the time of entering the name.

5. Candidates must have their names on the Medical Register of the United Kingdom, or, if they are graduates in medicine of universities outside the United Kingdom, must obtain the permission of the Board of the Faculty of Medicine.

6. Candidates shall be required at the time of entering their names to produce the following certificates: (i) *A certificate showing that the candidate has satisfactorily carried out in the University of Oxford the practical study of the anatomy of the eye and its appendages, including the development and minute structure of these parts. (ii) †A certificate showing that the candidate has satisfactorily carried out in the University of Oxford the practical study of physiological optics and of the physiology of vision. (iii) Certificates showing that the candidate has duly attended a course of clinical ophthalmology for 12 calendar months in connexion with hospitals or institutions recognised for the purpose by the Board of the Faculty of Medicine. (iv) A certificate showing that the candidate has satisfactorily carried out in the University of Oxford the study of the subjects of examination set forth in Clause 1.

7. The assistant registrar may require candidates to give such further information as he may judge necessary to satisfy him that the provisions regarding admission to the examination have been properly observed.

8. Any candidate who has failed to send in his name as above prescribed shall be permitted to do so up to the seventh day before the commencement of the examination on payment of an additional fee of two guineas.

* The course for this certificate would occupy one term in the department of human anatomy.

† The course for this certificate would occupy one term in the department of physiology.

FOREIGN UNIVERSITY INTELLIGENCE.—*Athens:* Dr. N. Kephallinós has been appointed Extraordinary Professor of Children's Diseases.—*Berlin:* Dr. Felix von Luschan, who was for some years a surgeon in the Austrian army in Bosnia, has been appointed Professor of Anthropology in the Philosophical Faculty.—*Innsbruck:* Dr. Rudolf Pick of Prague has been appointed Professor of Anatomy.—*Marburg:* Dr. Alfred Lohmann, *privat-docent* of Physiology, has been granted the title of Professor.—*Naples:* Dr. Arnoldo Cantani has been recognised as *privat-docent* of Medicine.—*New York (College of Physicians and Surgeons):* Dr. Theodore C. Janeway, of the Bellevue Hospital and Medical College, has been appointed Professor of Medicine.—*Rome:* Dr. Canzio Ricci has been recognised as *privat-docent* of Psychiatry, and Dr. Vasco Forli as *privat-docent* of Neurology and Psychiatry.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The annual meeting of the Fellows was held on June 5th, Mr. J. Lentaigne, the President, being in the chair. A favourable report was submitted. During the year 19 candidates having passed the examination were admitted Fellows, 48 obtained the Licence, 27 the Diploma in Public Health, 16 the Licence in Dental Surgery, and 70 passed the entrance examination. The obituary list showed that eight Fellows and 28 Licentiates died during the year. There are at present living 484 Fellows, 2910 Licentiates, 303 Diplomates in Public Health, and 538 Licentiates in Dental Surgery. At a meeting of the Fellows held on June 7th the following were elected for the ensuing year:—President: Mr. John Lentaigne. Vice-President: Mr. Robert H. Woods. Secretary of the College: Sir Charles A. Cameron, C.B. Council: Sir Henry R. Swanzy, Mr. William Stoker, Sir Charles Alexander Cameron, C.B., Mr. John B. Story, Sir Charles B. Ball, Sir Thomas Myles, Sir Arthur Chance, Mr. Richard D. Purefoy, Sir Lambert H. Ormsby, Mr. Henry G. Sherlock, Mr. R. Bolton M'Causland, Mr. R. Lane-Joynt, Mr. William Taylor, Mr. Edward H. Taylor, Mr. G. Jameson Johnston, Mr. R. Charles B. Maunsell, Mr. William Ireland Wheeler, Mr. D. Edgar Flinn, and Mr. Thomas E. Gordon.

DONATIONS AND BEQUESTS.—Under the will of the late Mr. Charles Morrison of Basildon the London Hospital will receive £10,000.—The late Mrs. Annie J. Holborn of Kensington bequeathed by will £5000 to St. Bartholomew's Hospital, £500 to the Kensington Dispensary and Children's Hospital for a "Kensington Chapel" cot, £500 to the Home for Confirmed Invalids, Highbury, and £200 to the Medical Mission in connexion with the Women's Settlement at Canning Town.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The annual conversazione and Cavendish lecture will be held at Kensington town hall on Friday, June 25th, at 8 o'clock. Lecturer: Sir Victor Horsley. Subject: The Cerebellum.

LITERARY INTELLIGENCE.—A new edition of Dr. F. W. Burton-Fanning's "Open-air Treatment of Pulmonary Tuberculosis" (Modern Methods of Treatment Series) is announced by Cassell and Co., Limited. In this edition the author deals with the researches of Sir A. E. Wright and his collaborators as well as with the new methods of early diagnosis, including Calmette's ophthalmo-reaction.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. P. Katchkoffski, *privat-docent* of Surgery in the University of Kieff.—Dr. Bourneville, physician to the Bicêtre.—Dr. Ludwig Hoffer von Sulmthal, extraordinary professor of medicine in the University of Gratz.—Dr. A. Pinner, extraordinary professor of chemistry in the University of Berlin, at the age of 67 years.

ST. PAUL'S EYE HOSPITAL, LIVERPOOL: OPHTHALMIA NEONATORUM.—At the annual meeting of the supporters of St. Paul's Eye Hospital references were made to the new departure made in the direction of special measures for the treatment of ophthalmia neonatorum and the prevention of subsequent blindness. The scheme had been warmly commended in the memorandum appended to the report of the committee of the British Medical Association, and had there been described as an almost ideal method which might well be imitated in other large cities. It was also stated that the Local Government Board had sent a request for particulars, and evidence had been given before the Parliamentary committee appointed to consider the working of the Midwives Act. The cases of ophthalmia neonatorum treated in the hospital during the first year were 75, and during the first four months of 1909 53. The ward now contains four beds for mothers and four cots. The accommodation having proved insufficient the committee appealed for funds to rebuild the hospital on a site opposite the David Lewis Northern Hospital. A special feature of the new hospital is to be the extra accommodation for children with a view to the prevention of blindness. There will be an ophthalmic ward of ten beds and ten cots, and two wards (including isolation rooms) of ten beds each for boys and girls respectively. It is proposed that this department shall be designated the "George Edward Walker Memorial Children's Department," in memory of the late senior surgeon. The cost of reconstruction will be about £13,000, of which sum £6000 and the value of the land were already promised or given. It was agreed to call the institution in the future "St. Paul's Eye Hospital," and to cease to treat diseases of the ear.

THE SOCIETY FOR TRAINING TEACHERS OF THE DEAF AND FOR THE DIFFUSION OF THE ORAL SYSTEM.—The annual general meeting of this society, which advocates the use of the German or "pure oral" system of speech, was held, by the kind permission of Mrs. and Dr. H. E. Symes-Thompson, at 33, Cavendish-square, W., on May 26th. Sir Melvill Beachcroft, chairman of the London County Council, presided, and in the course of a very interesting address said that the society had been doing its best for 30 years to train and send out qualified teachers of the deaf on the pure oral system. 25 years ago the Royal Commission on the Deaf had recommended that the training colleges for teachers of the deaf should receive at least an equal grant to that given to the ordinary training colleges, but no grant had been given (except in the case of the "third year student"), and they were to a very large extent dependent on voluntary aid. It was remarkable, he said, that the State should be backward in assuming the fullest responsibility in regard to the deaf and the blind; and though deafness is perhaps a greater misfortune than blindness, as it isolates the sufferer more completely from society, more has been done, and is being done, for the blind in this country than for the deaf. He hoped that as a result of the meeting increased interest would be shown in the efforts of this institution to provide the means for teaching the dumb to speak and the deaf to read. Mr. P. Macleod Yearsley, medical inspector of the London County Council deaf schools, and honorary lecturer on anatomy and physiology at the society's training college, urged the necessity of deaf children remaining longer at school. Mrs. Arthur Kinsey, late lady-superintendent of the training college and school, described how deaf children were taught to speak. Miss Mary Johnston, lecturer on the training of the speaking voice, Dr. G. E. Shuttleworth, and Mr. B. St. John Ackers, founder of the society, also spoke, and the usual votes of thanks brought the meeting to a close. The college and school at Eaton Rise, Ealing, are open to visitors on Tuesdays during term.

HYGIENE IN ELEMENTARY SCHOOLS. — The following motions were unanimously carried at a meeting of the Council of the Metropolitan Counties Branch of the British Medical Association on May 27th:—

1. That the Council of the Metropolitan Counties Branch of the British Medical Association, representing over 2700 registered members of the medical profession resident in, and for the most part practising in London, would respectfully urge on the London County Council, and also on all boards of managers of elementary schools in London, that, in view of the questions of physical welfare which will be undertaken by the school care committees and the local associations of care committees about to be formed, it is desirable to include in the membership of each of those committees one or more registered medical practitioners.

2. That a copy of the preceding resolution be sent to the following—namely, (1) the chief officials of the Education Department of the London County Council; (2) the honorary secretaries of divisions of the Metropolitan Counties Branch of the British Medical Association; (3) the divisional correspondents of the London County Council; (4) the honorary correspondents of non-provided Church schools; (5) the clerks of all borough councils in London, with an appropriate covering letter in each case; also to (6) THE LANCET and *British Medical Journal* and any other suitable medical or nursing journal.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The End of the Whitsuntide Holidays.

MANY Members of Parliament prolonged their holiday for a few days after Thursday, June 3rd, when the House of Commons resumed its sittings. In fact, the attendance on Thursday was one of the smallest seen for many a day. However, the sitting was not wasted. The Government was able to get one of the allotted days of supply, and in the crowded condition of the Ministerial programme every day is precious. The expectation is prevalent that the session will extend into September, if not into October. The Finance Bill will take precedence over other measures, and Members who are interested in the Housing and Town Planning Bill and Mr. BURNS's Milk Bill are beginning to regret that more progress with them was not made in the early part of the session. It is too soon to write confidently of their ultimate prospects of becoming law this session. Opposition to Bills, unless they excite widespread controversy, is apt to become languid in July and August. Thus it is remarkable how many Bills a Government will pass through their remaining stages in a very few weeks towards the end of a session, when Members are anxious to be released from attendance to their Parliamentary duties.

Dr. Newsholme's Annual Report.

The publication of the annual report of the medical officer of the Local Government Board is usually delayed a considerable time. Dr. ARTHUR NEWSHOLME'S report for the year 1907–08 is only now issued as a Parliamentary paper. It principally concerns the general administrative business of the medical department, but there are appended to it several reports dealing with important problems of public health from the pens of other medical officers. Dr. NEWSHOLME himself indicates the work which the medical department of the Local Government Board has done. He states that, as in past years, it has sought to extend its usefulness by obtaining and disseminating knowledge. It has held conferences with local authorities and their officers with reference to such matters as the prevalence of disease, hospital construction, local by-laws, and the appointment of officers. Advice and assistance have been directly rendered to local authorities by the visits of medical inspectors. Formal inquiries have been held by these officers into such matters as the combination of districts for hospital and other administrative purposes, loans for hospital sites and buildings, local by-laws, and schemes for water-supply and sewage disposal. Other sections of Dr. NEWSHOLME'S own report deal with vaccination, plague, cholera, and auxiliary scientific investigations.

Industrial Poisoning.

Dr. THOMAS M. LEGGE, H.M. medical inspector of factories, has written a report which deals largely with the cases of industrial poisoning occurring in 1908. It is included in the Blue-book containing the annual report of the Chief Inspector of Factories and Workshops for that year. Dr. LEGGE includes in his report a table setting forth in a succinct form the statistics on the cases of industrial poisoning. From

it it appears that 646 cases of lead poisoning were notified in 1908, and 32 had a fatal termination. Only one case of phosphorus poisoning is mentioned, and ten persons were affected by mercurial poisoning. There were 23 cases of arsenic poisoning, one of which resulted in death. 47 cases of anthrax were reported, and seven of them were fatal.

Milk and Dairies (Scotland) Bill.

Lord PENTLAND'S Milk and Dairies (Scotland) Bill, which is now published, must, like the Milk Bill of Mr. BURNS for England, be read in conjunction with the recently issued Tuberculosis Order of the Board of Agriculture. That Order applies to all parts of the United Kingdom except Ireland. Lord PENTLAND'S Bill provides for the appointment of veterinary inspectors by local authorities in Scotland, and the licensing of dairies. It is to be the duty of the medical officer of health, or other officer authorised by the local authority, at least once a year to inspect all dairies within a district and to make a report on them. Local authorities are to make by-laws regulating the inspection of cattle in dairies, and the structure, ventilation, and cleansing of buildings, and also for securing the health of the cows, and the cleanliness of persons engaged in the business, and the avoidance of infection and contamination. The Local Government Board for Scotland is given powers by the Bill to make general or special Orders. These Orders may lay down (*a*) the measures to be taken for cooling the milk and protecting it against infection and contamination; (*b*) the prohibition or regulation of the use of preservatives; (*c*) the manner of conveyance of milk intended for sale for human consumption; (*d*) the prohibition or regulation of the mixing of the milk from different churns; and (*e*) the labelling of the receptacles of milk for sale for human consumption, where the milk is sold otherwise than in its natural state. Another clause in the Bill provides for the notification of cows suffering from tuberculosis or any other disease liable to infect or contaminate the milk. The milk of diseased cows must not be sold for human food, and diseased animals must be kept apart from healthy. Persons suffering from disease of an infectious nature are precluded from assisting in a dairy. Power to take samples of milk is given to medical officers of health and veterinary inspectors. The Bill contains 27 clauses, many of which provide the machinery for carrying out its main principles.

The Housing and Town Planning Bill.

The Housing and Town Planning Bill is now awaiting its committee stage, which is to be taken in committee of the whole House. Several Members have given notice of their intention to move instructions before the committee stage is actually begun. Sir WALTER FOSTER, following up the line which he took in the debate on the second reading of the Bill, intends to move "that it be an instruction to the committee to extend the scope of the Bill so as to make provisions with respect to the appointment and duties of borough and district medical officers of health." The amendments to the Bill, of which notice has been given, fill about 22 pages of the notice paper.

The Principalship of Aberdeen University.

The appointment of the Principal of the University of Aberdeen, in succession to the late Principal MARSHALL LANG, is occupying the attention of the Secretary for Scotland. Some time may elapse before the appointment is announced, but in Parliamentary circles the name of Dr. MATTHEW HAY, Aberdeen, is freely mentioned in connexion with it. It also has been stated that there is a probability that the appointment may be given to a gentleman not at present associated with the work of the University.

The Medical Acts (Amendment) Bill.

Mr. COOPER has withdrawn his Medical Acts (Amendment) Bill dealing with the subject of anæsthetics. Several Members put down hostile motions which barred its progress, but its disappearance will be only temporary. The object of the Bill was to require a medical practitioner applying for registration on or after January, 1911, to submit evidence of having received practical instruction in the administration of anæsthetics and to prohibit any person not a registered medical practitioner administering an anæsthetic except under certain conditions. The rights of persons registered as dentists before the commencement of the Act were safeguarded. Those who are acting with Mr. COOPER on the subject of the administration of anæsthetics are anxious to have the provisions of the Bill extended as regards registered dentists. His simplest course, therefore, has been to withdraw the Bill temporarily and to reintroduce it in an amended form. The reintroduction will take place in a few days.

Public Health and Social Conditions.

An interesting Blue-book containing statistical memoranda and charts relating to public health and social conditions has been presented to Parliament by the Local Government Board. The volume generally has been prepared by Mr. C. F. ADAIR HORE, but the Poor-law and public health sections have been produced under the supervision of Mr. DAVY and of Dr. A. NEWSHOLME, the medical officer of the Board, respectively. The section relating to public health deals with the rates of mortality in the United Kingdom, European countries, and large towns, infant mortality, the principal causes of death, the mortality from various diseases, including tuberculosis, public health administration, housing and overcrowding, and the public medical service. Much interesting information bearing on these subjects is given in this section.

HOUSE OF COMMONS.

THURSDAY, JUNE 3RD.

Enteric Germ-carriers Amongst Soldiers.

Mr. JOHN WARD asked the Secretary of State for War whether the non-commissioned officers and men now under experimental treatment as enteric germ-carriers had each given personal sanction to such experiments before inoculation; and whether, in case the treatment permanently impaired their health, they would be granted pensions.—Mr. HALDANE wrote in reply: The proposed treatment was fully explained to the patients, who, far from offering any objection, are greatly interested in what is being done. Apart from their liability to infect others, they are in exceedingly good health, and the possibility of permanent injury to their health from the treatment need not be contemplated. Papers on the subject will shortly be laid.

TUESDAY, JUNE 8TH.

Tuberculosis in Greenock.

Mr. W. THORNE asked the Lord Advocate whether his attention had been called to the high death-rate in Greenock caused by phthisis and other tuberculous diseases; and whether he intended taking any action in the matter.—Mr. URE replied: The Local Government Board for Scotland are aware that the death-rate from phthisis in Greenock is somewhat high. They have the matter under consideration and are in communication with the local authority.

The Budget and Medicines.

In the course of the debate on the motion for the second reading of the Finance Bill,

Mr. PRETYMAN expressed the hope that the Chancellor of the Exchequer would in regard to spirit duties find some means of relieving from the extra taxation the medicines into which spirits entered. The increase in the price of medicines would fall very hardly on poor hospitals throughout the country, which might also be hit in respect of their subscriptions on account of the Budget.

WEDNESDAY, JUNE 9TH.

Returns on Experiments on Living Animals.

Mr. GEORGE GREENWOOD asked the Secretary of State for the Home Department whether the words university physiological laboratory in the list of places on the register under the Act 39 and 40 Vict., c. 77, in the Return of Experiments on Living Animals, No. 172, of June 11th, 1908, referred to the physiological laboratory of the University of London; whether that laboratory was now situate in the building which used to be known as the Imperial Institute; whether that building, or the part of it which was used for such laboratory, was purchased by public moneys; whether it was now owned by the State or by the University; and whether he would give directions that in future the returns of experiments on living animals should in the list of registered places set forth specifically the addresses of such places, in order that the public might be informed where such places actually were.—Mr. GLADSTONE replied: The answer to the first and second parts of the question is in the affirmative. The answer to the third part is that the part of the building in the occupation of the University of London was transferred to His Majesty's Commissioners of Works under an agreement the nature of which is explained in the Parliamentary paper of July, 1899; to the fourth that it is in the occupation of the University and is held by the Commissioners of Works as explained in the Parliamentary paper referred to. The return for 1908 is now in print, but if my honourable friend will inform me of any reasons for giving more detailed addresses of registered places in future returns I will consider them. In the particular case to which he refers the address given is that used as the postal address of the institution.

BOOKS, ETC., RECEIVED.

REBMAN, LIMITED, London.

The Diseases of Women. By J. Bland-Sutton, F.R.C.S. Eng., and Arthur E. Giles, M.D., B.Sc. Lond., F.R.C.S. Edin. Sixth Edition. Price 11*s.* net.

SAUNDERS (W. B.) COMPANY, Philadelphia and London.

Atlas and Epitome of Ophthalmoscopy and Ophthalmoscopic Diagnosis. By Prof. Dr. O. Haab, of Zürich. Second American Edition from the Fifth Revised and Enlarged German Edition. Edited by G. E. de Schweinitz, A.M., M.D. Price 13*s.* net.

Atlas of the External Diseases of the Eye. Including a Brief Treatise on the Pathology and Treatment. By Prof. Dr. O. Haab, of Zürich. Authorised Translation from the German. Third Edition, Revised. Edited by G. E. de Schweinitz, A.M., M.D. Price 13*s.* net.

SCIENTIFIC PRESS, LIMITED, London.

Burdett's Hospitals and Charities, 1909. By Sir Henry Burdett, K.C.B., K.C.V.O. Price 7*s.* 6*d.* net.

SWAN SONNENSCHEIN AND CO., LIMITED, London. (CLARKE, S., Manchester.)

The Intermediate Sex. A Study of Some Transitional Types of Men and Women. By Edward Carpenter. Price 3*s.* 6*d.* net.

SWAN SONNENSCHEIN AND CO., LIMITED, London.

The Climate of Strathpeffer. By H. W. Kaye, M.D. Oxon. Price 2*s.* 6*d.*

THOM, ALEX., AND CO., Dublin. (LONGMANS, GREEN, AND CO., London

The Royal University of Ireland. The Calendar for the Year 1909. Price not stated.

Examination Papers, 1908. A Supplement to the University Calendar for the Year 1909. Price not stated.

TIPOGRAFIA "LA SPERANZA," Roma.

La Nuova Scienza Medica ossia La Sifilide ereditaria ed acquisita in rapporto alle Malattie del Corpo umano. Per il Dr. Pasquale Fusco. Volume I. Price not stated.

URBAN UND SCHWARZENBERG, Berlin und Wien.

Atlas der Rectalen Endoskopie. Von Dr. Arthur Foges, Wien. I. Teil. Price M.14.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BURGESS, MILDRED M., M.D. Lond., has been appointed Medical Officer of the Brixton Hill London County Council Industrial School for Girls.

HEATH, A. D., M.D. Lond., M.R.C.S., M.R.C.P. Lond., has been appointed Physician-in-Charge of the Skin Department of the General Hospital, Birmingham.

HEATON, GEORGE, M.B., Ch.B. Oxon., F.R.C.S. Eng., has been re-appointed Honorary Surgeon to the General Hospital, Birmingham.

MASSON, CHARLES ARMIT, M.B., Ch.B. Aberd., has been appointed Senior Assistant Physician at Inverness District Asylum.

MCKILLOP, A. C., M.B., Ch.B. Edin., has been appointed Junior Assistant Physician at Inverness District Asylum.

MOORE, IRWIN, M.B., C.M., has been appointed Assistant Surgeon to the London Throat Hospital.

NIALL, W. G., M.D., M.S. R.U.I., has been appointed Medical Officer to the Guildford No. 2 District.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BERMONDSEY MEDICAL MISSION.—Resident Assistant (female).

BIRMINGHAM GENERAL DISPENSARY.—Resident Surgeon, unmarried. Salary £170 per annum, with rooms, fire, lights, and attendance.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Resident Medical Officer. Salary £150, with board and residence. Also House Surgeon for six months. Salary at rate of £75 per annum, with board and residence.

BOURNEMOUTH, ROYAL BOSCOMBE AND WEST HANTS HOSPITAL.—House Surgeon, for six months. Salary at rate of £80 per annum, with board, lodging, and washing.

BRADFORD POOR-LAW HOSPITAL AND WORKHOUSE.—Assistant Resident Medical Officer (female). Salary £130 per annum, with rations, apartments, and washing.

BRECON AND RADNOR ASYLUM, Talgarth, Breconshire.—Assistant Medical Officer. Salary £170 per annum, with board, apartments, attendance, and laundry.

BRIGHTON, HOVE, AND PRESTON DISPENSARY.—House Surgeon, unmarried. Salary £130 per annum, with board and residence.

CANTERBURY, KENT AND CANTERBURY HOSPITAL.—House Surgeon also Assistant House Surgeon, both unmarried. Salaries £80 and £60 per annum respectively, with board, lodging, and washing.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £75 per annum, with board, washing, and residence.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon. Salary £75 per annum, with residence, board, and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Resident Medical Officer. Salary £100 per annum, with board, residence, and laundry. Also Medical Officer and Second Medical Officer to the Casualty Department, both for six months. Salaries at rate of £100 and £40 per annum respectively with luncheon and tea.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, S.E.—House Physician for seven months. Salary at rate of £60 per annum, with board, residence, and washing. Also Clinical Assistants in the Out-patient Departments.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon, unmarried. Salary £60 per annum, with board, lodging, and washing.

GLOUCESTERSHIRE EDUCATION COMMITTEE.—School Medical Inspector. Salary £250 per annum, with travelling expenses.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Also Assistant House Surgeon. Salaries £100 and £50 per annum respectively, with board, residence, and laundry.

INDIAN MEDICAL SERVICE, India Office, London.—Twenty-one Commissions.

INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary £100 per annum, with board, &c.

IRELAND, LURGAN UNION WORKHOUSE AND FEVER HOSPITAL.—Resident Medical Officer (female). Salary £80 per annum, with apartments, laundry, and rations.

KENSINGTON AND FULHAM GENERAL HOSPITAL, Earl's Court, London, S.W.—Resident Medical Officer. Salary £50 per annum, with board, washing, and residence.

LEEDS, WEST RIDING ASYLUM, Menston.—Fourth Assistant Medical Officer. Salary £150 per annum, with board and apartments.

LINDSEY (LINCOLNSHIRE) EDUCATION COMMITTEE.—Two School Medical Inspectors. Salary £300 per annum.

LIVERPOOL INFIRMARY FOR CHILDREN.—Two Resident Medical Officers for six months. Salary in each case £30, with board and residence.

LONDON COUNTY ASYLUM. Colney Hatch, New Southgate, N.—Junior Assistant Medical Officer. Salary £160 per annum, with board, apartments, and washing.

LONDON HOSPITAL MEDICAL COLLEGE.—Assistant to the Bacteriologist and Lecturer on Bacteriology.

LONDON TEMPERANCE HOSPITAL.—Assistant House Surgeon, for six months. Salary at rate of £75 per annum.

LUTTERWORTH UNION.—District Medical Officer and Public Vaccinator. Salary £40 per annum and fees.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead.—Junior Resident Medical Officer. Salary £50 per annum, with board and residence.

NEW HOSPITAL FOR WOMEN, Euston-road.—Medical Woman to take Charge of X-Ray Department. Also an Anæsthetist.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Third Resident Medical Officer. Salary £60 per annum, with board, residence, and laundry.

NORFOLK COUNTY ASYLUM, Thorpe, Norwich.—Locum Tenens Assistant Medical Officer. Salary 3 guineas per week and all found.

NORWICH, JENNY LIND INFIRMARY FOR CHILDREN, Unthank-road.—Resident Medical Officer (female). Salary £50 per annum, with board, apartments, and laundry.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Junior Obstetric Assistant (Resident) and Clinical Assistants (females).

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, West Strand, W.C.—Assistant Surgeon.

ST. MARK'S HOSPITAL FOR FISTULA AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—Three Clinical Assistants.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.—Honorary Physician.

SEAMEN'S HOSPITAL SOCIETY.—Pathologist. Salary £100 per annum, with board.

SHEFFIELD UNION HOSPITAL, Firvale.—Resident Assistant Medical Officer. Salary £100 per annum, with apartments, rations, &c.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician for six months. Salary at rate of £100 per annum, with rooms, board, and washing.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL, Hartshill.—Resident Surgical Officer, House Physician, and Junior House Surgeon. Salaries £120, £100, and £50 per annum respectively, with apartments, board, and washing.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician for six months. Salary £30, with board, lodging, and laundry.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Assistant House Surgeon, unmarried. Salary £75 per annum, with board, residence, and washing.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Resident Obstetric Assistant for six months. Board and lodging provided.

WESTON-SUPER-MARE HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and residence.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—House Physician, unmarried. Salary £65 per annum, with board, residence, &c.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY.—House Surgeon. Salary £80 per annum, with apartments, board, and laundry.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Two House Surgeons. Salary £80 per annum, with board, lodging, and laundry.

Births, Marriages, and Deaths.

BIRTHS.

BASHFORD.—On June 4th, at 18, Downshire-hill, Hampstead, N.W., the wife of H. H. Bashford, M.D. Lond., of a daughter.

DENYER.—On May 30th, at Albion-street, Hull, Yorks, the wife of Stanley E. Denyer, C.M.G., M.D. Cantab., F.R.C.S. Eng., of a daughter.

GREENE.—On June 5th, at Crossbrook-street, Cheshunt, Herts, the wife of W. A. Greene, M.R.C.S., of a daughter.

SPOOR.—On May 29th, at 55, High-street, Stoke Newington, London, the wife of Herbert M. Spoor, M.B., Ch.B. Edin., M.P.S., of a son.

WILSON.—On June 5th, at Hilgrove-road, N.W., the wife of J. Clark Wilson, M.D., M.R.C.P., of a daughter.

MARRIAGES.

MILLER—WHITE.—On June 5th, at St. Mark's Church, Hamilton-terrace, by the Rev. H. C. Frith, Vicar of the Church of the Holy Redeemer, Clerkenwell, Reginald Miller, M.D., M.R.C.P., to Ethel, youngest daughter of the late George White of Newton Abbot.

SHIPMAN—BOUSFIELD.—On June 2nd, at the parish church, Grantham, George Alfred Cargill Shipman, M.A., M.B., to Dorothy Louisa, only daughter of the late Rev. Stephen Bousfield, M.A., Rector of Shelton, Nottingham, and Mrs. Bousfield, Grantham.

WANKLYN—RICE.—On June 1st, at the English Church, Munich, by the resident chaplain, the Rev. D. Cooper Hunt, M.A., William McConnel, second son of the late Rev. Edward Wanklyn, Vicar of St. Michael's, Bournemouth, to Ethel, fourth daughter of the late Rev. C. H. Rice, Rector of Cheam.

WORTON—DAVIDSON.—On June 5th, at the parish church, Croydon Albert S. Worton, M.D., to Annie Myrtle, youngest daughter of the late Robert Davidson and Mrs. Davidson.

DEATHS.

GATHERGOOD.—On Tuesday, June 1st, after a long illness patiently borne, Benjamin William Gathergood, M.D. (retired), at his residence, Aylmer Hall, Tilney, near King's Lynn, Norfolk, aged 57.

LEEDS.—On May 31st, at Murrayfield, King's-road, Reading, Charles George Stretton Leeds, M.D., youngest son of the late Henry Leeds, Cheltenham.

PLUMBE.—On June 7th, at Monkendons, Maidenhead, Samuel Thomson Plumbe, M.D. Lond., aged 55 years.

SKERRITT.—On June 4th, at her father's house, Mary Dorothy Skerritt, widow of the late Edward Markham Skerritt, M.D., F.R.C.P., of Ivor House, Durdham Park, Bristol, and eldest daughter of John Heelas of White Knight's Park, Reading, in her 60th year.

N.B.*—*A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE BRITISH FIRE PREVENTION COMMITTEE.

THE occasion of the tenth anniversary of incorporation was celebrated recently by the British Fire Prevention Committee in various ways. A series of fire tests with fire-resisting doors was conducted at the committee's testing station at Regent's Park, and an anniversary banquet, under the presidency of Mr. E. O. Sachs, was held on May 25th at the Gaiety Restaurant.

The chief toast of "Success to the Committee" was given by the Earl of Londesborough, who pointed to the successful work done by the committee in reducing the loss of life and property from spread of fire, and who also dwelt on the greater knowledge of building materials and appliances obtained by the scientific and independent tests at the committee's testing station, which had done much to obtain a better understanding as to the value and also the limitations of the different methods of construction and equipment. He emphasised the fact that the committee's funds had been voluntarily raised and that during the ten years' work some £23,000 had been spent in research. About 150 subjects had already been under investigation, some of these involving as many as 20 or 30 testing operations.

The Chairman, in reply, indicated that the question of popularisation of fire prevention as affecting child life in particular would have the most serious consideration of the committee in the future, and that their efforts would be employed to combat the carelessness which resulted in children playing with fire, the dropping of matches in the street, and the use of celluloid combs and flannelette clothing.

In reply to the toast by Judge Rentoul on the British Fire Service Captain Hamilton laid stress on the fact that the harmony which now existed between fire preventive and fire service work had been brought about during the period he had held office, and that he was happy to see that all societies and the London Fire Brigade were now working harmoniously to a common end.

A number of foreign delegates from the International Fire Service Council who were present spoke in appreciative terms of the committee's work of the last ten years. Many telegrams brought messages from abroad to the same effect.

The widespread acknowledgment of the research work and the reports of the British Fire Prevention Committee is well deserved, for it is a private body working voluntarily, whilst similar work which is being done abroad depends on the aid of Government grants. The committee is actuated by the most public spirited of motives and is performing such an important service to the State that it is not a little surprising to find the State content to let the work depend on the munificence of an enthusiastic handful of subscribers. There is little need to remind medical men of the paramount importance of prophylaxis in our warfare against disease, and no less important are preventive measures in the protection of the community against the other great hostile forces of Nature, of which uncontrolled fire is perhaps the most terrible that in this country we are called upon to face. And there is too often a close parallel between the salvage which the fire brigade can effect in a burning house and that which the physician can bring about in a diseased body. The only satisfactory treatment for fire and disease alike is to prevent their occurrence, and in this endeavour the British Fire Prevention Committee is in honourable partnership with the Public Health Service of the country. A further bond between the two bodies is their common recognition of the fact that the only rational way to improve their methods is by systematic research into the causes of the evils which they exist to combat. Anyone desiring further information of this interesting society will find its offices at 1, Waterloo-place, Pall Mall, S.W.

"RONTGEN RAY WRINKLES."

To the Editor of THE LANCET.

SIR,—I think Mr. Leslie Miller has chosen a singularly unfortunate title for his book—"Röntgen Ray Wrinkles." As Röntgen ray treatment is now so popular, not to say fashionable, for skin diseases such as eczema, the lay reader will be horrified to think wrinkles can be the result of this treatment!

I am, Sir, yours faithfully,

Park-street, W., June 6th, 1909. BERNARD E. POTTER.

THE LATEST QUACK ADVERTISEMENT.

THE gullibility of the public in all ranks of life as to anything concerning their health is well known. There is no form of "treatment," from "Christian Science" down to rheumatic rings, which is not believed in by someone. The United States are, however, the happy hunting ground of the quack, and the matter which we reproduce below will, we are sure, bring joy to the mind of Dr. Weir Mitchell as a story worthy of the delightful quack whose autobiography he wrote some few years ago.

Dr. Kaufmann, according to the circular which puffs his remedy, was in 1850 a professor at the University of Berlin, a post which he held for 13 years, during which time he is stated to have written largely for THE LANCET. Concerning both these statements we have considerable doubts. Among the numerous diseases which Kaufmann's Bitters will cure (according to himself) is "scrofula," and the letter which follows was written by a Mrs. Shaw, "a celebrated spiritualist and clairvoyant physician of West Twenty-Sixth-street, New York City." Mrs. Shaw, it will be noticed, does not give the year in which the occurrence took place.

(Copy)

New York City, August 1st.

My Dear Dr. Kaufmann,—Some time ago I treated a case of scrofula of over twenty-five years' standing, for which thousands of dollars had been paid without receiving any benefit. It came to my notice in what you would call a rather singular manner. One evening while holding a circle at the house of Mrs. ——, Fifth Avenue, my attention was called to the case. Among those who gathered was Mrs. ——, the wife of a wealthy banker of New Orleans, who was visiting the lady at whose house the circle was being held. The circle was held in the front parlor, upstairs, adjoining which was the bedroom of the lady of the house. Manifestations of various kinds had occurred, when, all of a sudden, rappings, screeches, and yells took place. In fact, it seemed as if a babble of noises had broken loose, when the bedroom door opened, and an empty bottle of Sulphur Bitters which was standing on the mantel-piece, and of which the lady of the house had used the last the day before, rolled along the floor, jumped upon the table around which we were all seated, tumbled first to one and another, stopping a second at each one, until it was in front of this lady, who was troubled with the scrofula, when it fell into her lap. The rapping, screeches, and yells then continued, but after a short time stopped; and a pencil, which lay upon some letter paper, rose up, as it were, and wrote these words: "Have faith; Sulphur Bitters will aid and cure you." The paper then blew into the same lady's lap. It was afterwards examined and read by us all. I then persuaded the lady to try it. At this time she had suffered for twenty-five years. Her case was the worst I ever saw. Her ears and eyes were in a most pitiable condition, and on her neck she had scrofulous lumps. And then for over six months she had suffered with running sores on her leg, and at this time her eyes were in such a condition that she could hardly see out of them, and her face was so bad that it almost made me shudder, as used as I am to look on the sick and suffering. Well, Doctor, to make a long story short, she took my advice and used your Sulphur Bitters, for when I saw those spirit manifestations take place that evening I knew Sulphur Bitters would cure her. After using it less than six months she was completely cured, and her last words to me the day she left for her beautiful southern home were: "May God bless old Dr. Kaufmann." And allow me to say that I never saw the equal of your Sulphur Bitters in all diseases of the blood. I am, yours sincerely,

EVANGELINE SHAW.

AN INFLUENTIAL APPEAL.

IN response to the appeal in THE LANCET of May 15th, the following further subscriptions have been received:—

	£	s.	d.
Amount already acknowledged	22	19	0
Mr. A. J. Horne, President, R.C.P.I.	3	3	0
Mr. J. Lentaigne, President, R.C.S.I.	3	3	0
Dr. Lombe Atthill (Monkstown, Co. Dublin)	2	0	0
"Melitensis" (Malta Postal Orders)	2	0	0
Dr. J. J. Charles (Portstewart, Co. Derry) ...	1	0	0
"Sympathy"	2	2	0
"A Practitioner" (Dublin)	1	1	0
Mr. Arthur Finegan (Mullingar)	1	1	0
Mr. J. Knox Denham (Dublin)	1	1	0
	£39	10	0

PICTORIAL PRECEPTS FOR THE TUBERCULOUS.

WE have received a large sheet of highly picturesque illustrations showing what to do and what to avoid with a view to the prevention or limitation of tuberculous infection. Being well calculated to arouse popular interest, these pictures afford the most promising means of appealing to that section of the public which is in a general way impervious to advice on the subject of personal health. The illustrations represent in a graphic manner the evils of indiscriminate spitting, of intemperance, of constantly closed windows, of overcrowded rooms, and other hygienic errors. The illustrations (21 on a sheet) may be obtained from the office of the *Medical Officer*, 36-38, Whitefriars-street, London, E.C., and are supplied in three sizes, suitable respectively as a poster, as a card for hanging up, and as a handbill. We understand that the health committee of Richmond, in Surrey, is making use of these pictures for inculcating hygienic principles.

"METHODS OF BARBARISM" IN ITALIAN HOSPITALS.

IF anything could accelerate the reforms in the hospitals of Italy—reforms (writes an Italian correspondent) long engaging the attention of special commissioners and calling loudly for prompt and effective enforcement—it would be such an incident as the following, which has been going the round of the Roman press. A little girl, between seven and eight years of age, of respectable parentage, was recently admitted into the Policlinico for diphtheria and placed in the isolation pavilion. A "suora" (nun), with two "infermiere" (assistant nurses), was in charge of the ward. The little patient cried without ceasing, so

audibly that the "suora," losing patience, seized her one evening, and with the aid of an "infermiera" dragged her to the dead-house, in which several corpses were lying. "If you don't keep quiet," was the "suora's" threat, "we'll leave you here among the dead bodies." The little girl, terrified out of her wits, "kept quiet" accordingly; but her parents, shortly thereafter, having come to know what had been done to her, lodged a complaint with the director of the Policlinico, who ordered the "suora" to be dismissed from the hospital. This is the last of a series of "irregularities" (to put it mildly) which, occurring in the best appointed and most "up-to-date" of the Roman hospitals, has diffused something like a panic in the poorer classes, who (in the words of the official *Tribuna*) "tremble at the thought of their children having to go to the Policlinico." The dismissal of one of the clinical staff for moral turpitude; the "flirtations" (or worse) between patients and their visitors or attendants; the abandonment of the moribund by "suore" and "infermiere" alike; thefts of clothing and other articles belonging to the administration of the hospital; general disorder resulting from perfunctory surveillance—these and other sinister details to which the official journal calls attention in the week now passing more than justify the repugnance felt by the poorer classes to enter the Policlinico, or, indeed, the sister institutions whose record is not a whit more creditable. In an article on the whole question of the Policlinico and its management, the *Tribuna* draws attention (among many other abuses) to the pernicious system of "tipping" the nurses and inferior *personnel*. Inadequately paid, these functionaries graduate their services according to the "mance" (gratuities) they receive from the parents or relatives of the patients. "Hence," says the official journal, "the quarrels, the rivalries, the irregularities, in a word, the disorganisation of the service." The whole hospital system, indeed, not only in Rome but in the provinces, is more than ripe for reform, reform of the most drastic, the most "root-and-branch" description. Italy has many friends, nowhere so many or so free-handed as in the English-speaking world. But there are limits even to British-American loyalty and largess, and not a few among her sympathisers and supporters are beginning to echo the dying words of her life-long friend, Sir James Stansfeld, the coöperator and subsidiser of Mazzini and Garibaldi: "This Italy"—he used the words to Mde. White-Mario, as reported in the *Tribuna* some ten years ago—"is not the Italy you and I fought for!"

LYNN THOMAS AND SKYRME FUND.

THE following additional subscriptions to the above fund have been received: J. Harris Jones (Maesteg), £1 10*s.*; S. P. Francis (Brecon), 10*s.* 6*d.*

THE "HANDY" URINE COLLECTING BOTTLE.

IT is a matter of daily necessity to obtain samples of urine for purposes of analysis. The ordinary medicine bottle is not convenient for this purpose owing to its narrow neck. Messrs. C. J. Hewlett and Son, 35 to 42, Charlotte-street, London, E.C., have designed a new bottle in which the neck is extended in the shape of a funnel. It is convenient in shape, is secured by an indiarubber stopper, and enclosed in a neat japanned case. The bottle, which has a capacity of about four and a half ounces, can be easily cleansed and a roughened space is engraved on the front on which the name of the patient may be written. We have no doubt that this simple piece of apparatus will prove useful. The price is 2*s.* 6*d.*

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 20, Hanover-square, W.

THURSDAY.

DERMATOLOGICAL SECTION (Hon. Secretaries—Arthur Whitfield, E. G. Graham Little): at 5 P.M.

Dr. Wilfred Fox and Dr. Rolleston: A Case of Leukæmic Infiltration of the Skin.

And other Cases.

FRIDAY.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—Hugh Lett, E. I. Spriggs, Harold J. Stiles). Provincial Meeting at Edinburgh.

N.B.—Fellows of the Society are entitled to attend and to speak at all Meetings.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—8 P.M., Dr. J. A. Braxton Hicks: Exhibition of the Better-known Tropical Parasites.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY.—5 P.M., Dr. W. S. Lazarus-Barlow: Radioactivity and Carcinoma (an Experimental Enquiry). (Croonian Lectures.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

MONDAY.—4 P.M., Dr. J. Galloway: Clinique (Skin). 5.15 P.M., Lecture:—Mr. L. Mummery: The Diagnosis of Diseases of the Rectum and Anus.

TUESDAY.—4 P.M., Dr. P. Stewart: Clinique (Medical). 5.15 P.M., Lecture:—Dr. W. H. H. Tate: Climacteric Hæmorrhage.

WEDNESDAY.—4 P.M., Mr. P. J. Freyer: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. C. Dent: Persistent Symptoms after Head Injuries.

THURSDAY.—4 P.M., Sir Jonathan Hutchinson: Clinique (Surgical). 5.15 P.M., Lecture:—Mr. E. Corner: Affections of the Umbilicus.

FRIDAY.—4 P.M., Mr. M. S. Mayou: Clinique (Eye).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Pathological Demonstration:—Dr. Bernstein. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Bidwell: Practical Surgery.

TUESDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. 12.15 P.M., Lecture:—Dr. Pritchard: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Dr. S. Taylor: Valvular Disease—Aortic Obstruction.

WEDNESDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Harman: Diseases of the Eyes. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women. 5 P.M., Lecture:—Dr. Beddard: Medicine.

THURSDAY.—10 A.M., Lecture:—Surgical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Dunn: Diseases of the Eyes. 2.30 P.M., Operations. 5 P.M., Lecture:—Mr. Edwards: Clinical.

FRIDAY.—10 A.M., Dr. Moullin: Gynæcological Operations. Lecture:—Medical Registrar: Demonstration of Cases in Wards. 2 P.M., Medical and Surgical Clinics. X Rays. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Operations. Dr. Abraham: Diseases of the Skin. 5 P.M., Lecture:—Mr. B. Harman: "Pink Eye."

SATURDAY.—10 A.M., Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. Mr. Harman: Diseases of the Eyes. 12.15 P.M., Lecture:—Dr. G. Stewart: Practical Medicine. 2 P.M., Medical and Surgical Clinics. X Rays. 2.30 P.M., Operations. Dr. Robinson: Diseases of Women.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10 A.M., Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. W. Carson); X Rays. 4.30 P.M., Medical In-patient (Dr. A. J. Whiting).

TUESDAY.—Clinic: 10 A.M., Medical Out-patient (Dr. A. G. Auld). 2.30 P.M., Operations (Mr. Carson). Clinics:—Surgical Out-patient (Mr. W. Edmunds); Gynæcological (Dr. A. E. Giles). 4.30 P.M., Lecture:—Dr. G. G. Macdonald: Pathology of Cardiac Inflammations.

WEDNESDAY.—Clinics:—2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. H. W. Carson); X Rays. 3 P.M., Medical In-patient (Dr. G. P. Chappel). 4.30 P.M., Lecture Demonstration: Mr. A. de Prenderville: On the Administration of Anæsthetics.

FRIDAY.—10 A.M., Clinic:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M., Operations (Mr. W. Edmunds). Clinics:—Medical Out-patient (Dr. A. G. Auld); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Sir Dyce Duckworth: Medicine. 3.15 P.M., Mr. Turner: Surgery. 4 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. Carless: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 3.15 P.M., Special Lecture:—Mr. Carless: Fractures about the Ankle.

WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. P. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye. 3.30 P.M., Special Lecture:—Mr. Cargill: Glaucoma—Diagnosis and Treatment.

THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.

FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Special Lecture:—Dr. R. Bradford: Some Varieties of Anæmia.

SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

TUESDAY.—3.30 P.M., Clinical Lecture:—Sir William Gowers: Tremor.

FRIDAY.—3.30 P.M., Clinical Lecture:—Sir Victor Horsley: Surgery of the Nervous System.

CENTRAL LONDON THROAT AND EAR HOSPITAL, Gray's Inn-road, W.C.

TUESDAY.—3.45 P.M., Lecture:—Dr. Atkinson: Pharynx and Naso-pharynx.

FRIDAY.—3.45 P.M., Lecture:—Dr. Abercrombie: Pharynx and Naso-pharynx.

WEST-END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W.

MONDAY.—3 P.M., Clinical Demonstration: Dr. H. Campbell.
TUESDAY.—5 P.M., Clinical Demonstration: Dr. J. Mackenzie.
WEDNESDAY.—3 P.M., Clinical Demonstration: Dr. F. Palmer.
THURSDAY.—3 P.M., Clinical Demonstration: Dr. T. D. Savill.
FRIDAY.—2 P.M., Clinical Demonstration: Dr. P. Stewart. 5.30 P.M., Clinical Demonstration: Dr. E. Macnamara.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (14th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.).

TUESDAY (15th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College 2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

WEDNESDAY (16th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan 9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (17th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, (9 A.M., Major, 2 P.M.).

FRIDAY (18th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.) Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor 9 A.M., Major, 2 P.M.).

SATURDAY (19th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will insure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and generally do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

SOLE AGENTS FOR AMERICA—Messrs. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 10th, 1909.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 4	29·74	N.E.	0·25	70	52	46	46	46	Raining
,, 5	29·75	N.E.	0·27	77	56	46	49	52	Cloudy
,, 6	29·90	E.	0·07	60	54	45	45	46	Overcast
,, 7	30·08	E.	0·05	100	61	46	48	53	Cloudy
,, 8	30·08	W.	...	115	69	47	51	55	Fine
,, 9	30·07	N.W.	...	101	65	53	52	56	Cloudy
,, 10	30·00	N.E.	...	58	54	52	52	54	Overcast

Communications, Letters, &c., have been received from—

A.—Mr. Frank Argles, Wanstead; Mr. Thomas Allen, Wadebridge; Messrs. Allen and Hanburys, Lond.; A. J. L.; Army und Navy Male Nurses' Co-operation, Lond., Secretary of.

B.—Mr. M. J. Barry, Dublin; British Fire Prevention Committee, Lond.; Dr. H. O. Butler, Lond.; The Bayer Co., Lond.; Mr. W. G. Burcombe, Lincoln; Fleet-Surgeon E. F. Bate, R.N., Devonport; British Medical Association, Metropolitan Counties Branch, Lond., Hon. Secretaries of; Brecon and Radnor Asylum, Talgarth, Clerk to the; Messrs. Burroughs, Wellcome, and Co., Lond.; Messrs. Bates, Hendy, and Co., Reading; Messrs. Blundell and Rigby, Lond.; Mr. J. J. Bentley, Nottingham; Mr. G. Sherman Bigg, Lond.; Messrs. Beaufey and Co., Lond.; Dr. C. Ballabene, Milan; Bristol, Medical Officer of Health of.

C.—Dr. W. Collingridge, Lond.; Mr. W. H. Coupland, Lancaster; Dr. P. J. Cammidge, Lond.; Continental Tyre and Rubber Co., Lond.; Messrs. A. H. Cox and Co., Brighton; C. R.; Messrs. Condy and Mitchell, Lond.; Messrs. Cassell and Co., Lond.; Mr. W. Clark, Wimbledon; Mr. C. T. Cook, Lond.; Mr. R. M. Corner, Lond.; Church and Medical Union, Lond., Secretary of; Cambridge Scientific Instrument Co., Cambridge; Mr. F. W. Clarke, Chorlton-cum-Hardy; Messrs. Cadrones and Co., Lond.; Mrs. Wilberforce Clarke, Earls Colne; *The Commercial Motor*, Lond., Editor of; Mr. L. L. Callender, Nottingham.

D.—Dr. R. W. Doyne, Lond.; Dr. A. C. Dutt, Gaya; Denver Chemical Manufacturing Co., Lond.

E.—Messrs. Evans and Witt, Lond.; Dr. W. P. Eagleton, Newark, U.S.A.; Dr. J. Eyre, Lond.

F.—Mr. A. E. Ferris, Lond.; Messrs. Harvey Frost and Co., Lond.; Messrs. H. Frowde and Hodder and Stoughton, Lond.; Mr. J. Woodland Fullwood, Lond.

G.—Dr. J. Alison Glover, Lond.; Messrs. Graab und Kranich, Berlin; Guest Hospital, Dudley, Secretary of; Messrs. G. Gillies and Co., Glasgow; Mr. D. G. Griffiths, Aberystwyth; Dr. A. Garrow, Steytlerville; Mr. S. K. Sen Guptu, Calcutta.

H.—Mr. N. Bishop Harman, Lond.; Dr. Francis Hare, Lond.; Fleet-Surgeon W. E. Home, R.N., Lond.; Messrs. C. J. Hewlett and Son, Lond.; Mr. W. T. Hedges, Lond.; Messrs. S. Henderson and Sons, Edinburgh; Messrs. W. Heffer and Sons, Cambridge; Dr. R. M. Hall, Lyminge.

I.—The India Rubber, Gutta Percha and Telegraph Works Co., Lond.; The Ilkley Brewery Co., Manager of; Income-Tax Adjustment Agency, Lond., Secretary of.

J.—Mr. Meyrick James, Brampton; Dr. Oscar Jennings, Le Vésinet; Mr. W. Jacob, Glasgow; J. E. B.; Major S. P. James, I.M.S., Simla; Dr. Ernest Jones, Toronto.

K.—Messrs. Kutnow and Co., Lond.; Dr. Knight, Portobello; Mr. S. Karger, Berlin; Dr. Preston King, Bath; Dr. R. Kovacs, Budapest; Messrs. R. A. Knight and Co., Lond.

L.—Mr. A. C. J. Legge, Lond.; Major G. Lamb, I.M.S., Govan; Lurgan Union, Clerk to the; London and Counties Medical Protection Society, General Secretary of; London Western District Printing Co., Manager of; Messrs. Lee and Nightingale, Liverpool; Leyton, Walthamstow, and Wanstead Children's and General Hospital, Walthamstow, Secretary of; Messrs. E. and S. Livingstone, Edinburgh; Dr. T. D. Lister, Lond.; Messrs. E. and A. Levetus and Co., Lond.; Messrs. Luzac and Co., Lond.; Mr. H. Angell Lane, Lond.

M.—Mr. Lawrie McGavin, Lond.; Mr. W. W. Mills, New York; *The Medical Officer*, Lond.; Messrs. Maple and Co., Lond.; Dr. M.; Mr. E. Merck, Lond.; Maltine Manufacturing Co., Lond.; Messrs. Macmillan and Co., Lond.; Messrs. Moss and Jameson, Lond.; M. E. J.; Mr. W. J. Melhuish, Upper Parkstone; Mr. M. Menier, Figeac; Dr. J. C. McWalter, Dublin; Mr. J. E. R. McDonagh, Lond.; Messrs. Mackie and Co., Glasgow; Dr. E. B. McCready, Pittsburg; Mr. J. M. Mangan, Ennis; Messrs. May, Roberts, and Co., Lond.; Mr. P. Metz, Birmingham; Male Nurses' (Temperance) Co-operation, Lond.; Mr. C. Devereux Marshall, Lond.; Mr. J. Macpherson, Lond.

N.—Mr. R. Nitch-Smith, Lond.; National Association for the Prevention of Consumption, &c., Lond.; Messrs. Neve, Beck, and Kirby, Lond.; Newport and Monmouthshire Hospital, Secretary of; Mr. J. C. Needes, Lond.; Mr. H. Needes, Lond.

P.—Dr. Bernard E. Potter, Lond.; Dr. T. Frederick Pearce, Calcutta; Provincial Board of Health, Victoria, Secretary of; Messrs. Peacock and Hadley, Lond.

R.—Mr. E. G. Richards, Bern; Mr. Thomas G. Read, Heathfield; Mr. H. N. Robson, Hastings; Royal Sanitary Institute, Lond.; Royal Meteorological Society, Lond.; Royal South Hants and Southampton Hospital, Secretary of; Royal Surrey County Hospital, Guildford, Secretary of; Royal Typewriters, Lond., Managing Director of; Dr. Beverley Robinson, New York; Messrs. Revy, Phillips, and Co., Lond.; Royal College of Surgeons in Ireland, Dublin, Registrar of; Mr. C. A. Ryde, Brussels; Dr. C. A. Rayne, Lancaster; Messrs. Reynolds and Branson, Leeds; Messrs. E. J. Reid and Co., Lond.; Dr. Charles Russ, Lond.

S.—Mr. R. V. Solly, Exeter; Professor E. H. Starling, Lond.; Mr. T. A. Southern, Cardiff; Dr. Samuel Sloan, Glasgow; Mr. J. Sumpter, Lutterworth; Dr. H. Scurfield, Sheffield; Dr. T. D. Savill, Lond.; St. Marylebone General Dispensary, Lond., Secretary of; Mr. Thomas F. A. Smith, Erlangen; Messrs. Shaw and Sons, Lond.; Mr. J. L. Sardy, Lond.; Messrs. Spottiswoode, Dixon, and Hunting, Lond.; Star Engineering Co., Wolverhampton; Messrs. G. Street and Co., Lond.; Dr. E. M. Spencer, Bridport.

T.—Dr. Ernest F. Travers, Lond.; Dr. D. G. Thomson, Thorpe; Messrs. R. Tomlinson and Sons, Birmingham; Mrs. Tattersall, Lond.; Dr. I. Tate, Shrewsbury; Dr. W. Trotter, Lond.; Lieutenant A. G. Tresidder, I.M.S., Bombay; Tower Tea Co., Lond.

U.—Union, Edinburgh, Managing Director of.

V.—The Vacca Co., Lond., Manager of; Vitalia, Lond.

W.—Dr. Will Walter, Chicago; Messrs. J. Woodhead and Sons, Leeds; Messrs. Wright and Sons, Bristol; Messrs. Widenmann, Broicher, and Co., Lond.; Dr. W. Walter, Evanston, U.S.A.; *West London Medical Journal*, Editor of; Miss Welch, Lond.; Mr. J. Williams, Bradford; Mr. C. Worth, Lond.; Weston-super-Mare Hospital, Hon. Secretary of; Dr. E. F. White, Lond.; Women's Holiday Fund, Lond., Secretary of; Messrs. Woodhams, Son, and Parks, Hastings; Mr. George Wherry, Cambridge.

Z.—Messrs. C. Zimmermann and Co., Lond.

Letters, each with enclosure, are also acknowledged from—

A.—Dr. H. Alston, West Kirby; Ashwood House, Kingswinford; Dr. H. G. Adamson, Lond.; Mr. F. C. Angear, Chatham; Mr. M. Anslow-Alabone, Lond.; A. H. S.; Apollinaris Co., Lond.; Anglo-American Pharmaceutical Co., Croydon; Dr. F. R. B. Atkinson, Shepperton.

B.—Dr. H. H. Bashford, Lond.; Berrow's Worcester Journal Co., Manager of; Bermondsey Medical Mission, Lond., Secretary of; Birkenhead Union, Clerk to the; Mr. W. E. Bracey, Wedmore; Mr. C. E. S. Brettingham, Ilchester; Mr. P. Bhedwar, Lond.

C.—Dr. J. F. Corson, Stone; Mr. E. Coppock, Blackpool; Central London Throat and Ear Hospital, Secretary of; Dr. C.; Cheltenham Corporation, Accountant to the; C. G. S.; C. W. R.; C. E. T.; Dr. C. Coles, Oxford.

D.—Messrs. Dewynter, Lond.; D. M.

E.—Mr. A. R. Elliott, New York; Mr. J. Evans, Rayleigh; E. H. M.; H. E. B.; E. H. S.

F.—Miss F.; F. W. A.

G.—Dr. S. Green, Lincoln; Mrs. Gillies, Rasdale.

H.—Dr. W. Harris, Lond.; H. J. B.; Surgeon F. G. Hitch, R.N., Sheerness.

J.—Messrs. Jacob and Johnson, Winchester; J. T.; J. H. D.; Jenner Institute for Calf Lymph, Lond., Secretary of; Jersey General Dispensary, Secretary of.

K.—Mr. R. C. B. Kerin, Lond.; Dr. C. Kidd, Bromsgrove.

L.—Mr. C. Shelton Lewis, Lond.; "Locum," Ipswich; "Locum," Woodford Bridge; Mr. R. T. Lang, Lond.; London Medical Mission, Secretary of; Lancs County Asylum, Winwick, Clerk to the.

M.—Dr. T. Milne, Lond.; Messrs. McDougall Bros., Manchester; Mr. T. Martin, Thatcham; M.D., Great Yarmouth; Dr. Norman Moore, Lond.; Monmouth High School for Girls, Secretary of; Dr. G. Metcalfe, Skelmersdale.

N.—Newport (Mon.) Union, Clerk to the; National Anti-vivisection Hospital, Lond., Secretary of; Notts Consumption Sanatorium, Mansfield, Clerk to the; North Devon Infirmary, Barnstaple, Secretary of; Newmain's Retreat, Proprietor of.

P.—Dr. W. G. Pretsell, Annfield Plain.

R.—Royal Institute of Public Health, Lond., Secretary of; Messrs. Reitmeyer and Co., Lond.; R. W. J.; Dr. H.

S.—Dr. F. E. Shipway, Lond.; Sheffield Union, Clerk to the; Dr. A. Wood Smith, Harrogate; Mr. G. H. Solomon, Malvern; Dr. H. M. Spoor, Lond.; Dr. C. Stiebel, Bradford; S. H. R.; Messrs. Squire and Sons, Lond.; *South Wales Argus*, Newport, Manager of; Dr. J. Symington, Belfast.

T.—Mr. J. Thin, Edinburgh; T. W.; T. J. D.; T. M.; T. H.

V.—Messrs. Van Houten, Lond.; Mr. G. M. Vickridge, Worthing; Dr. G. R. Vicars, Wood Dalling.

W.—West Norfolk and Lynn Hospital, Secretary of; W. V. P.; Messrs. Wheatley, Dyson and Son, Huddersfield; Wolverhampton and Midland Counties Eye Infirmary, Assistant Secretary of; Dr. W.; W. G.; Warrington Infirmary, Secretary of.

EVERY FRIDAY.

THE LANCET.

PRICE SEVENPENCE.

SUBSCRIPTION, POST FREE.

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance.

ADVERTISING.

Books and Publications ...	Seven Lines and under	£0 5 0
Official and General Announcements	Ditto	0 5 0
Trade and Miscellaneous Advertisements and Situations Vacant	Ditto	0 4 6
	Every additional Line	0 0 6

Situations wanted: First 30 words, 2s. 6d.; per additional 8 words, 6d.
Quarter Page, £1 10s. Half a Page, £2 15s. An Entire Page, £5 5s.

An original and novel feature of "THE LANCET General Advertiser" is a Special Index to Advertisements on pages 2 and 4, which not only affords a ready means of finding any notice but is in itself an *additional* advertisement.

Advertisements (to insure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to advertisements appearing in THE LANCET.

The Manager cannot hold himself responsible for the return of testimonials, &c., sent to the Office in reply to Advertisements; copies only should be forwarded.

Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Office, 423, Strand, London, to whom all letters relating to Advertisements or Subscriptions should be addressed.

THE LANCET can be obtained at all Messrs. W. H. Smith and Son's and other Railway Bookstalls throughout the United Kingdom. Advertisements are also received by them and all other Advertising Agents.

Agent for the Advertisement Department in France—J. ASTIER, 35, Rue Franklin, Asnieres, Paris.